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# Resources for Bats

August 2002



AWIC Resource Series No. 17





# Information Resources for Bats

AWIC Resource Series No. 17

August 2002

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## TABLE OF CONTENTS

Introduction .....	v
General .....	1 - 5
Anatomy .....	5 - 9
Anesthesia .....	9
Auditory / Hearing .....	9 - 31
Biology .....	31 - 38
Care / Housing / Behavior .....	39 - 50
Circulatory .....	51 - 53
Diseases / Parasites .....	54 - 62
Enrichment .....	63
Feeding / Nutrition / Metabolism .....	63 - 73
Histopathology / Immunochemistry .....	73 - 74
Intestinal .....	75 - 76
Muscular .....	76 - 78
Physiology .....	78
Reproductive .....	78 - 89
Research / Biomedical .....	90 - 107
Veterinary .....	107 - 108
Viruses .....	108 - 112
Selected Web site References for Bats .....	113 - 117
Document Delivery Information .....	119 - 124





## INTRODUCTION

Bats are an ubiquitous and relatively unknown species of mammal with an undeserved unsavory reputation. While some of them may cause damage to plants, animals or humans (fruit bats or vampire bats), many of them are beneficial to humans (insect eating bats) and a number of bats are being used in various areas of research, especially in auditory research, and exhibits. While there is a great deal of information in the databases on bats it is too voluminous to be presented here. This publication, therefore, contains selected references in a variety of areas with the hope that it will be useful to those using, or wishing to use, bats for whatever purpose they may desire. An additional section on selected web sites concerning bats is also included.



## GENERAL

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Descriptors: Chiroptera, diagnosis.

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Descriptors: techniques, care in captivity, breeding techniques.

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Language: Romanian.  
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Descriptors: anatomy, histology, ultrastructures.

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NAL call no: QP351.J68

Descriptors: midbrain, paralemniscal-tegmentum, echolocation.

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NAL call no: QL351 Z4

Descriptors: Chiroptera, articulation, pectoral girdle, shoulder joint morphology, function and evolution, phylogeny, flight.

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Language: Japanese.

NAL call no: 41.9 T5762

Descriptors: chemoreception, nasal cavity anatomy, nasal passages, significance in chemoreception.

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Language: Japanese.

NAL call no: 41.9 T5762

Descriptors: chemoreception, vomeronasal organ anatomy.

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Descriptors: cochlea ultrastructure, fibroblasts, anatomy, histology.

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NAL call no: Film S-1779

Descriptors: acoustic stimulation, brain mapping, anatomy, histology.

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NAL call no: SF604 A77

Descriptors: spinal cord, anatomy.

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NAL call no: Film S-1779

Descriptors: anatomy, histology, Chiroptera, infrared rays, sensation physiology.

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NAL call no: QL737.C5 B328

Descriptors: Chiroptera, biophysics, vertebral column, cervical vertebrae.

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Descriptors: ultrastructure, anatomy, histology, cytology.

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NAL call no: QL737.C5 B328

Descriptors: hibernation, mineral metabolism, bone cell changes, calcium metabolism.

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NAL call no: QL737 C5I55 1978

Descriptors: Chiroptera, dentition, phylogenetic use, phylogeny.

## ANESTHESIA

**Isoflurane anaesthesia in rabbits, rodents, bats and hedgehogs.** Hochleithner, M.; Hochleithner, C.; Engel, K. *Kleintierpraxis*, 1996, v. 41 (3), p. 187-190. ref. ISSN: 0023-2076.

Language: German

NAL call no: 41.8 K67

Descriptors: anaesthesia, anaesthetics, recovery, inhaled anaesthetics.

**Ketamine and ketamine: xylazine ED-50 for short-term immobilization of the island flying fox (*Pteropus hypomelanus*).** Heard, Darryl J.; Beale, Chris; Owens, John. *Journal of Zoo and Wildlife Medicine*, 1996, v. 27 (1), p. 44-48. ISSN: 1042-7260.

NAL call no: SF601 J6

Descriptors: ketamine, heart rate, immobilization, ketamine/xylazine, respiration rate.

**Bat anaesthesia.** (Correspondence), Routh, A., *Veterinary Record*, UK, 1995, v. 137 (18), p. 472. ISSN: 0042-4900.

NAL call no: 41.8.V641

Descriptors: anaesthesia, inhaled anaesthetics, animal welfare.

## AUDITORY / HEARING

**Multiple combination-sensitive neurons in the auditory cortex of the mustached bat.** Misawa, Hayato; Suga, Nobuo. *Hearing Research*, Jan. 2001, v. 151 (1-2), p. 15-29. ISSN: 0378-5955.

Descriptors: Neurology, sense organs, sensory reception, Chiroptera.

**Sound localization in a new-world frugivorous bat, *Artibeus jamaicensis*: Acuity, use of binaural cues, and relationship to vision.** Heffner, Rickye S.; Koay, Gimseong; Heffner, Henry E. *Journal of the Acoustical Society of America*, Jan. 2001, v. 109 (1), p. 412-421. ISSN: 0001-4966.

NAL call no: QC221.A27

Descriptors: Chiroptera, sensory system, ganglion cells, nervous system.

**Topographical distribution of delay-tuned responses in the mustached bat inferior colliculus.** Portfors, Christine V.; Wenstrup, Jeffery J. *Hearing Research*, Jan. 2001, v. 151 (1-2), p. 95-105. ISSN: 0378-5955.

Descriptors: auditory cortex, nervous system, delay-tuned neurons.

**Bicuculline application affects discharge patterns, rate-intensity functions, and frequency tuning characteristics of bat auditory cortical neurons.** Chen, Qi Cai; Jen, Philip H.S. *Hearing Research*, Dec. 2000, v. 150 (1-2), p. 161-174. ISSN: 0378-5955.

Descriptors: auditory cortex, brain stem, nervous system.

**Continuous hair cell turnover in the inner ear vestibular organs of a mammal, the Daubenton's bat (*Myotis daubentonii*).** Kirkegaard, M.; Jorgensen, J.M. *Naturwissenschaften*, Feb. 2000, v. 87 (2), p. 83-86. ill. ISSN: 0028-1042.

NAL call no: 474 N213

Descriptors: auditory hairs, hair cells of inner ear, evidence of continuous turnover.

**Corticofugal inhibition compresses all types of rate-intensity functions of inferior collicular neurons in the big brown bat.** Zhou, Xiaoming; Jen, Philip H.S. *Brain Research*, Oct. 20, 2000, v. 881 (1), p. 62-68. ISSN: 0006-8993.

NAL call no: Film S-1779

Descriptors: nervous system, sensory reception, inhibition.

**Corticofugal regulation of excitatory and inhibitory frequency tuning curves of bat inferior collicular neurons.** Jen, P.H.; Zhang, J.P. *Brain Research*, Sep. 11, 2000, v. 841 (1-2), p. 184-188. ISSN: 0006-8993.

NAL call no: Film S-1779

Descriptors: corticofugal, frequency tuning curves, excitatory, inhibitory.

**Directional sensitivity of frequency tuning curves of inferior collicular neurons in big brown bat, *Eptesicus fuscus*.** Zhang, Ji Ping; Jen, P.H.S.; Sun, Xin de. *Acta Biophysica Sinica*, Mar. 2000, v. 16 (1), p. 81-88. ill. ISSN: 1000-6737.

Language: Chinese.

Descriptors: brain, neurons, inferior colliculus, frequency tuning.

**Features of contralaterally evoked inhibition in the inferior colliculus.** Bauer, E.E.; Klug, A.; Pollak, G.D. *Hearing Research*, Mar. 2000, v. 141 (1-2), p. 80-96. ISSN: 0378-5955.

Descriptors: inferior colliculus, inhibition, features.

**Foliage echos: A probe into the ecological acoustics of bat echolocation.** Muller, Rolf; Kuc, Roman. *Journal of the Acoustical Society of America*, Aug. 2000, v. 108 (2), p. 836-845. ISSN: 0001-4966.



NAL call no: QC221.A27

Descriptors: biosonar system, echolocation, communication.

**Molecular evidence regarding the origin of echolocation and flight in bats.** Teeling, Emma C; Scally, Mark; Kao, Diana J.; Romagnoli, Michael L.; Springer, Mark S.; Stanhope, Michael J. *Nature* (London), Jan. 13, 2000, v. 403 (6766), p. 188-192. ill. ISSN: 0028-0836.

NAL call no: 472 N21

Descriptors: nucleic acids, echolocation, molecular genetics, phylogeny.

**Neural inhibition sharpens auditory spatial selectivity of bat inferior collicular neurons.** Zhou, X.M.; Jen, P.H.S. *Journal of Comparative Physiology A: Sensory, Neural & Behavioral Physiology*, Apr. 2000, v. 186 (4), p. 389-398. ill. ISSN: 0340-7594.

NAL call no: QP33.J68

Descriptors: brain, neurons, echolocation, *Eptesicus fuscus*.

**Neural responses to overlapping FM sounds in the inferior colliculus of echolocating bats.**

Sanderson, Mark I.; Simmons, James, A. *Journal of Neurophysiology*, Apr. 2000, v. 83 (4), p. 1840-1855. ill. ISSN: 0022-3077.

Descriptors: brain, inferior colliculus, neurons, echolocation, sound.

**Neuronal sensitivity to interaural time differences in the sound envelope in the auditory cortex of the pallid bat.** Lohuis, Thomas D.; Fuzessery, Zoltan M. *Hearing Research*, May, 2000, v. 143 (1-2), p. 43-57. ISSN: 0378-5955.

Descriptors: neuronal sensitivity, time differences, auditory cortex.

**Reorganization of the frequency map of the auditory cortex evoked by cortical electrical stimulation in the big brown bat.** Chowdhury, Syed A.; Suga, Nobuo. *Journal of Neurophysiology*, Apr. 2000, v. 83 (4), p. 1856-1863. ill. ISSN: 0022-3077.

Descriptors: brain, auditory cortex, neurons, echolocation.

**The role of GABAergic inhibition on direction-dependent sharpening of frequency tuning in bat inferior collicular neurons.** Jen, P.H.; Zhang, J. *Brain Research*, Apr. 17, 2000, v. 862 (1-2), p. 127-137. ISSN: 0006-8993.

NAL call no: Film S-1779

Descriptors: GABA, inhibition, frequency tuning, neurons.

**Spectral integration in the inferior colliculus of the mustached bat.** Leroy, Scott A.; Wenstrup, Jeffrey J. *Journal of Neuroscience*, Nov. 2000, v. 20 (22), p. 8533-8541. ISSN: 0270-6474.

Descriptors: behavior, nervous system, Chiroptera, neural coordination.

**Vocal control of acoustic information for sonar discriminations by the echolocating bat, *Eptesicus fuscus*.** Wadsworth, James; Moss, Cynthia F. *Journal of the Acoustical Society of America*, Apr. 2000, v. 107 (4), p. 2265-2271. ill. ISSN: 0001-4966.

NAL call no: QC221.A27

Descriptors: echolocation, vocal control of acoustic information for sonar discriminations.

- Acoustic flow perception in cf-bats: Properties of the available cues.** Muller, Rolf; Schnitzlwe, Hans Ulrich. *Journal of the Acoustical Society of America*, May 1999, v. 105 (5), p. 2958-2966. ill. ISSN: 0001-4966.  
NAL call no: QC221.A27  
Descriptors: echolocation, acoustic flow perception, Pteronotus, Rhinolophus.
- Audiovocal behavior of Doppler-shift compensation in the horseshoe bat survives bilateral lesion of the paralemniscal tegmental area.** Pillat, J.; Schuller, G. *Experimental Brain Research*, Mar. 1999, v. 119 (1), p. 17-26. ISSN: 0014-4819.  
Descriptors: tegmental area lesion, injury, nervous system disease.
- Comparison of the echolocation signals in three species of bats at fly.** Zhang, Shu Yi; Feng, Jiang; Li, Zhen Xin; Sheng, Lian Xi; Wang, Li Xin. *Acta Zoologica Sinica*, Dec. 1999, v. 45 (4), p. 385-389. ill. ISSN: 0001-7302.  
NAL call no: 410 AC87  
Descriptors: echolocation, signal characteristics, *Murina leucogaster*, *Pipistrellus savvi*, *Rhinolophus ferrumequinum*.
- Corticofugal amplification of facilitative auditory responses of subcortical combination-sensitive neurons in the mustached bat.** Yan, Jun; Suga, Nobuo. *Journal of Neurophysiology*, Feb. 1999, v. 81 (2), p. 817-824. ill. ISSN: 0022-3077.  
Descriptors: brain, neurons, sound reception.
- Corticofugal regulation of excitatory and inhibitory frequency tuning curves of bat inferior collicular neurons.** Jen, Philip, H.S.; Zhang, Ji Ping. *Brain Research*, Sep. 11, 1999, v. 841 (1-2), p. 184-188. ISSN: 0006-8993.  
NAL call no: Film S-1779  
Descriptors: inferior collicular, neurons, nervous system, inhibitory.
- Describing the echolocation calls and behavior of bats.** Fenton, M. Brock. *Acta Chiropterologica*, 1999, v. 1 (2), p. 127-136. ill. ISSN: 1508-1109.  
Descriptors: behavioral techniques, echolocation, calls and behavior.
- Echolocation signals of the bat, *Eptesicus serotinus* recorded using a vertical microphone array: Effect of flight altitude on searching signals.** Jensen, Marieanne Egebjerg; Miller Lee A.; *Behavioral Ecology and Sociobiology*, Dec. 1999, v. 47 (1-2), p. 60-69. ISSN: 0340-5443.  
NAL call no: QL751.B4  
Descriptors: acoustic behavior, flight altitude, echolocation signals.
- Effects of monaural plugging on the GABA-immunopositive neurons in the inferior colliculus of bat, *Myotis chinensis*.** Zhou, Xiaoming; Sun, Xinde. *Acta Biophysica Sinica*, Mar. 1999, v. 15 (1), p. 220-224. ill. ISSN: 1000-6737.  
Descriptors: neurons, neurotransmitters, brain, inferior colliculus, monaural plugging.
- Frequency discrimination of brief tonal steps as a function of frequency in the lesser bulldog bat.** Roverud, R.C. *Journal of Comparative Physiology A: Sensory, Neural and Behavioral Physiology*, Sept. 1999, v. 185 (3), p. 247-253. ill. ISSN: 0340-7594.

NAL call no: QP33 J68

Descriptors: sonographic technique, echolocation, frequency discrimination.

**Frequency organization and response to complex sounds in the medial geniculate body of the mustached bat.** Wenstrup, Jeffrey, J. *Journal of Neurophysiology*, Nov. 1999, v. 82 (5), p. 2528-2544. ISSN: 0022-3077.

Descriptors: auditory cortex, nervous system, medial geniculate body.

**The influence of electrical stimulation of bat auditory cortex on auditory sensitivity of inferior collicular neurons.** Zhang, Jiping; Sun, Xinde; Zhan, Xiping; Yang, Hongyan. *Acta Biophysica Sinica*, Mar. 1999, v. 15 (1), p. 98-103. ill. ISSN: 1000-6737.

Language: Chinese.

Descriptors: brain, neurons, auditory sensitivity, Hipposideros.

**Micromechanical responses to tones in the auditory fovea of the greater mustached bat's cochlea.** Russell, I.J.; Kossel, M. *Journal of Neurophysiology*, Aug. 1999, v. 82 (2), p. 676-686. ill. ISSN: 0022-3077.

Descriptors: ear, tones, sound.

**Response characteristics of neurons in the medial geniculate body of the little brown bat to simple and temporally-patterned sounds.** Llano, D.A.; Feng, A.S. *Journal of Comparative Physiology A: Sensory, Neural and Behavioral Physiology*, Apr. 1999, v. 184 (4), p. 371-385. ill. ISSN: 0340-7594.

NAL call no: QP33 J68

Descriptors: brain, medial geniculate body, neurons, sound reception.

**Scaling of echolocation call parameters in bats.** Jones, Gareth. *Journal of Experimental Biology*, Dec. 1999, v. 202 (23), p. 3359-3367. ISSN: 0022-0949.

NAL call no: 442.8 B77

Descriptors: biosonar, body size, call frequency, echolocation.

**Sound duration selectivity in the pallid bat inferior colliculus.** Fuzessery, Z.M.; Hall, J.C. *Hearing Research*, Nov. 1999, v. 137 (1-2), p. 137-154. ISSN: 0378-5955.

Descriptors: auditory cortex, midbrain, nervous system.

**Sound localization in an old-world fruit bat (*Rousettus aegyptiacus*): Acuity, use of binaural cues, and relationship to vision.** Heffner, Rickye, S.; Koay, Gimseong; Heffner, Henry E. *Journal of Comparative Psychology*, Sept. 1999, v. 113 (3), p. 297-306. ISSN: 0735-7036.

NAL call no: BF671.J6

Descriptors: acuity, binaural cues, conditioned avoidance, echolocation, intensity.

**Timing in the auditory system of the bat.** Covey, Ellen; Casseday, John H. *Annual Review of Physiology*, 1999, v. 61, p. 457-476. ill. ISSN: 0066-4278.

NAL call no: 444.8 An7

Descriptors: Chiroptera, neurons, sound reception, echolocation, sound.

**Auditory motion induces directionally dependent receptive field shifts in inferior colliculus neurons.** Wilson, W.W.; O'Neill, W.E. *Journal of Neurophysiology*, Apr. 1998, v. 79 (4), p. 2040-2062. ISSN: 0022-3077.

Descriptors: auditory motion, receptive field shifts, inferior colliculus neurons.

**Audiovocal behavior of Doppler-shift compensation in the horseshoe bat survives bilateral lesion of the paralemniscal tegmental area.** Pillat, J.; Schuller, G. *Experimental Brain Research*, Mar. 1998, v. 119 (1), p. 17-26. ISSN: 0014-4819.

Descriptors: audiovocal behavior, Doppler shift, bilateral lesion.

**Changes in cochlear mechanics during vocalization: Evidence for a phasic medial efferent effect.** Goldberg, R.L.; Henson, O.W. *Hearing Research*, Aug. 1998, v. 122 (1-2), p. 71-81. ISSN: 0378-5955.

Descriptors: cochlear mechanics, vocalization, physiology, neurons.

**Compromises: Sound frequencies used in echolocation by aerial-feeding bats.** Fenton, M.B.; Portfors, C.V.; Rautenbach, I.L.; Waterman, J.M. *Canadian Journal of Zoology*, Jun. 1998, v. 76 (6), p. 1174-1182. ill. ISSN: 0008-4301.

NAL call no: 470 C16D

Descriptors: Chiroptera, echolocation, feeding behavior, insect prey.

**Corticofugal modulation of the midbrain frequency map in the bat auditory system.** Yan, Wei; Suga, Nobuo. *Nature Neuroscience*, May 1998, v. 1 (1), p. 54-58. ill. ISSN: 1097-6256.

Descriptors: brain, neurons, sound reception.

**Features of ipsilaterally evoked inhibition in the dorsal nucleus of the lateral lemniscus.** Yang, L.; Pollak, G.D. *Hearing Research*, Aug. 1998, v. 122 (1-2), p. 125-141. ISSN: 0378-5955.

Descriptors: dorsal nucleus, lateral lemniscus, evoked inhibition.

**GABAergic and glycinergic inhibition sharpens tuning for frequency modulation in the inferior colliculus of the big brown bat.** Koch, U.; Grothe, B. *Journal of Neurophysiology*, Jul. 1998, v. 80 (1), p. 71-82. ill. ISSN: 0022-3077.

Descriptors: proteins, brain, neurotransmitters, GABAergic, glycinergic.

**Hearing and hunting in red bats (*Lasiurus borealis*, *Vespertilionidae*): Audiogram and ear properties.** Obrist, Martin K.; Wenstrup, Jeffery J. *Journal of Experimental Biology*, Jan. 1998, v. 201 (1), p. 143-154. ill. ISSN: 0022-0949.

NAL call no: 442.8 B77

Descriptors: sound reception, hearing, ear, echolocation, foraging.

**Hearing in a megachiropteran fruit bat (*Rousettus aegyptiacus*).** Koay, G.; Heffner, R.S.; Heffner, H.E. *Journal of Comparative Physiology*, Dec. 1998, v. 112 (4), p. 371-382. ill.

NAL call no: 444.8 Z3

Descriptors: sound reception, behavioral variation, audiogram, species comparisons.

**How echolocating bats approach and acquire food.** Kalko, Elisabeth K.V.; Schnitzler, Hans Ulrich. Kunz, Thomas H. & Racey, Paul A. (eds). *Bat Biology and Conservation*. Smithsonian



Institution Press, Washington. 1998, i-xvi, p. 1-365. Chapter pagination: 197-204. ill. ISBN: 1560988258.

NAL call no: QL737 C5B367 1998

Descriptors: Chiroptera, echolocation, food capture, foraging, literature review.

**How echolocating bats search and find food.** Schnitzler, Hans Ulrich; Kalko, Elisabeth K. V., Kunz, Thomas H. & Racey Paul A. (eds.) *Bat Biology and Conservation*. Smithsonian Institution Press, Washington, 1998: i-xvi, p. 1-365. Chapter pagination: 183-196. ill. ISBN: 1560988258.

NAL call no: QL737 C5B367 1998

Descriptors: Chiroptera, echolocation, foraging, literature review.

**One tone, two ears, three dimensions: A robotic investigation of pinnae movements used by rhinolophid and hipposiderid bats.** Walkerm V.A.; Peremans, H.; Hallam, J.C.T. *Journal of the Acoustical Society of America*, Jul. 1998, v. 104 (1), p. 569-579. ISSN: 0001-4966.

NAL call no: QC221.A27

Descriptors: acoustic localization, echolocation, passive acoustic filtering.

**Passive sound-localization ability of the big brown bat, *Eptesicus fuscus*.** Koay, Gimseong; Kearns, Dara; Heffner, Henry E.; Heffner, Rickye S. *Hearing Research*, May, 1998, v. 119 (1-2), p. 37-48. ISSN: 0378-5955.

Descriptors: high frequency tones, low frequency tones, passive sound localization.

**Processing of sinusoidally frequency modulated signals in the nuclei of the lateral lemniscus of the big brown bat, *Eptesicus fuscus*.** Huffman, Russell F.; Argeles, Pablo C.; Covey, Ellen. *Hearing Research*, Dec. 1998, v. 126 (1-2), p. 161-180. ISSN: 0378-5955.

Descriptors: biosonar signal, coefficient of synchronization, sense organs.

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Descriptors: auditory pathways, physiology, brain stem physiology.

**Sensorimotor integration in bat sonar.** Kunz, Thomas H.; Racey, Paul A. (eds). *Bat Biology and Conservation*. Smithsonian Institution Press, Washington, DC, 1998, i-xvi, p. 1-365. Chapter pagination: 220-230. ill. ISBN: 1560988258.

NAL call no: QL737 C5B367 1998

Descriptors: brain, Superior colliculus, echolocation, review.

**Spontaneous classification of complex tones at high and ultrasonic frequencies in the bat, *Megaferma lyra*.** Preisler, Annemarie lyra. *Journal of the Acoustical Society of America*, May, 1998, v. 103 (5), p. 2595-2607. ISSN: 0001-4966.

NAL call no: QC221.A27

Descriptors: brain, echolocation, high and ultrasonic frequencies.

**Target flutter rate discrimination by bats using frequency-modulated sonar sounds: Behavior and signal processing models.** Grossetete, Anne; Moss, Cynthia F. *Journal of the*

*Acoustical Society of America*, Apr. 1998, v. 103 (4), p. 2167-2176. ISSN: 0001-4966.  
NAL call no: QC221.A27

Descriptors: echolocation, insect-prey target flutter rate, frequency modulated sonar sounds.

**Temporal processing across frequency channels by FM selective auditory neurons can account for FM rate selectivity.** Gordon, M; O'Neill, W.E. *Hearing Research*, Aug. 1998, v. 122 (1-2), p. 97-108. ISSN: 0378-5955.

Descriptors: brain stem, physiology, auditory perception, Chiroptera.

**Tonic efferent-induced cochlear damping in roosting and echolocating mustached bats.** Xie, D.H.; Hensen, O.W. Jr. *Hearing Research*, Oct. 1998, v. 124 (1-20), P. 60-68. ISSN: 0378-5955.

Descriptors: echolocating, roosting, sensory system, cochlea.

**Acute sensitivity to interaural time differences in the inferior colliculus of a bat that relies on passive sound localization.** Fuzessery, S.M. *Hearing Research*, Jul. 1997, v. 109 (1-2), p. 46-62. ill. ISSN: 0378-5955.

Descriptors: brain, inferior colliculus, role in passive sound localization, sound reception.

**Audiogram of the big brown bat (*Eptesicus fuscus*).** Koay, Gimseong; Heffner, Henry E.; Heffner, Rickye S. *Hearing Research*, Mar. 1997, v. 105 (1-2), p. 202-210. ISSN: 0378-5955.

Descriptors: ear, audiogram, frequency range determination, sound.

**The columnar region of the ventral nucleus of the lateral lemniscus in the big brown bat, *Eptesicus fuscus*: Synaptic arrangements and structural correlates of feedforward inhibitory function.** Vater, M.; Covey, E.; Casseday, J.H. *Cell and Tissue Research*, 1997, v. 289 (2), p. 223-233. ISSN: 0302-766X.

NAL call no: QH581.A1Z4

Descriptors: ascending auditory pathway, feedforward inhibitory function, nervous system, synaptic arrangements, neurons.

**The distribution of GABA and glycine immunostaining in the cochlear nucleus of the mustached bat, *Pteronotus parsonellii*.** Kemmer, Michaela; Vater, Marianne. *Cell and Tissue Research*, 1997, v. 287 (3), p. 487-506. ISSN: 0302-766X.

NAL call no: QH581.A1Z4

Descriptors: cochlear nucleus, cytological method, glycine, immunochemistry.

**The effects of GABA on auditory information processing of bats.** Wu, Feijian; Chen, Qicai. *Journal of Central China Normal University (Natural Sciences)*, Jun. 1997, v. 31 (2), p. 205-212. ISSN: 1000-1190.

Language: Chinese.

Descriptors: Chiroptera, nervous system, effect of GABA, neurotransmitters.

**Neural tuning to sound duration in the inferior colliculus of the big grown bat, *Eptesicus fuscus*.** Ehrlich, Daphna; Casseday, John H.; Covey, Ellen. *Journal of Neurophysiology*, May 1997, v. 77 (5), p. 2360-2372. ill. ISSN: 0022-3077.

Descriptors: neural tuning, sound duration, inferior colliculus.

**NMDA-mediated facilitation in the echo-delay tuned areas of the auditory cortex of the mustached bat.** Tanahashi, Atsushi; Horikawa, Junsei; Suga, Nobuo. *Hearing Research*, Aug. 1997, v. 110 (1-2), p. 219-228. ill. ISSN: 0378-5955.  
Descriptors: brain, neurons, echolocation, auditory cortex.

**Neural selectivity and tuning for sinusoidal frequency modulations in the inferior colliculus of the big brown bat, *Eptesicus fuscus*.** Casseday, John H.; Covey, Ellen; Grothe, Benedikt. *Journal of Neurophysiology*, Mar. 1997, v. 77 (3), p. 1595-1605. ill. ISSN: 0022-3077.  
Descriptors: brain, inferior colliculi, neurons, ear.

**Sharpening of frequency tuning by inhibition in the thalamic auditory nucleus of the mustached bat.** Suga, Nobuo; Zhang, Yunfeng; Yan, Jun. *Journal of Neurophysiology*, Apr. 1997, v. 77 (4), p. 2098-2114. ill. ISSN: 0022-3077.  
Descriptors: brain, neurons, sound, thalamic auditory nucleus.

**Auditory computation for biosonar target imaging in bats.** Simmons, J.A.; Saillant, P.A.; Ferragamo, M.J.; Haresign, T.; Dear, S.P.; Fritz, J.; McMullen, T.A. *Springer Handbook of Auditory Research*, 1996, v. 6, p. 401-468. ill. ISSN: 0947-2657.  
Descriptors: Chiroptera, brain, neurons, ear, echolocation, orientation.

**Auditory space representation in the inferior colliculus of juvenile bat, *Rhinolophus rouxi*.** Lin, Longnian; Sun Xinde. *Acta Biophysica Sinica*, Jun. 1996, v. 12 (2), p. 258-262. Ill. ISSN: 1000-6737.  
Language: Chinese.  
Descriptors: brain, neurons, echolocation, orientation.

**The course and distribution of medial efferent fibers in the cochlea of the mustached bat.** Henson, M.M.; Xie, D.H.; Wynne, R.H.; Wilson, J.L.; Henson, O.W. Jr. *Hearing Research*, Dec. 1996, v. 102 (1-2), p. 99-115. ill. ISSN: 0378-5955.  
Descriptors: neurons, ear, cochlea, medial olivocochlear nerve fibers.

**The early postnatal development of F-actin patterns in the organ of Corti of the gerbil (*Meriones unguiculatus*) and the horseshoe bat (*Rhinolophus rouxi*).** Kuhn, Brigit; Vater, Marianne. *Hearing Research*, Sept. 1996, v. 99 (1-2), p. 47-70. ill. ISSN: 0378-5955.  
Descriptors: proteins, F-actin patterns in the organ of Corti, postnatal development.

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Descriptors: biophysics, ear, echolocation, cochlear partition mechanics.

**Further studies on the mechanics of cochlear partition in the mustached bat. 2. A second cochlear frequency map derived from acoustic distortion products.** Kossel, Manfred; Vater, Marianne. *Hearing Research*, May, 1996, v. 94 (1-2), p. 78-86. ill. ISSN: 0378-5955.  
Descriptors: biophysics, ear, echolocation, *Pteronotus parnellii*.



- A microiontophoretic study of acetylcholine effects in the inferior colliculus of horseshoe bats: Implications for a modulatory role.** Habbicht, H.; Vater, M. *Brain Research*, Jun. 17, 1996, v. 724 (2), p. 169-179. ISSN: 0006-8993.  
NAL call no: Film S-1779  
Descriptors: acetylcholine, pharmacology, physiology, Chiroptera.
- The midbrain creates and the thalamus sharpens echo-delay tuning for the cortical representation of target-distance information in the mustached bat.** Jun, Yan; Nobuo, Suga. *Hearing Research*, Apr. 1996, v. 93 (1-2), p. 102-110. ill. ISSN: 0378-5955.  
Descriptors: brain, midbrain, thalamus, echolocation, sound.
- Monaural and binaural spectral cues created by the external ears of the pallid bat.** Fuzessery, Zoltan M. *Hearing Research*, May 1996, v. 95 (1-2), p. 1-17. ill. ISSN: 0378-5955.  
Descriptors: external ears, *Antrozous pallidus*, binaural spectral cue creation.
- Neural ensemble coding of target identity in echolocating bats.** Ratnam, R.; Condon, C.J.; Feng, A.S. *Biological Cybernetics*, 1996, v. 75 (2), p. 153-162. ISSN: 0340-1200.  
Descriptors: echolocation, nervous system, neural ensemble coding.
- Temporal integration in the echolocating bat, *Megaderma lyra*.** Wiegrebe, Lutz; Schmidt, Sabine. *Hearing Research*, 1996, v. 102 (1-2), p. 35-42. ill. ISSN: 0378-5955.  
Descriptors: *Megaderma lyra*, echolocation, auditory temporal integration.
- Analysis and classification of delay-sensitive cortical neurons based on response to temporal parameters in echolocation signals.** Chittajallu, S.K.; Palakal, M.J.; Wong, D. *Hearing Research*, Apr. 1995, v. 84 (1-2), p. 157-166. ISSN: 0378-5955.  
Descriptors: auditory cortex, chemistry, Chiroptera physiology.
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NAL call no: Film S-1779

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NAL call no: QC221.A27

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Descriptors: auditory cortex, anatomy, histology, autoradiography.
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NAL call no: Film S-1779  
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Descriptors: auditory pathways, physiology, echolocation.



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NAL call no: Film S-1779

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Descriptors: bat, sonar echos, information content.

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Descriptors: oxygen consumption, whole animal physiology, ion and water relations, evaporative water loss, respiratory function, temperature relationships.

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NAL call no: QL336 Z6

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NAL call no: QP33 J681

Descriptors: weight, proteins, body mass, energy budget, mammary glands, lactation.

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NAL call no: QL1 J68

Descriptors: behavior, sensory reception, body size, diet.

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NAL call no: QL336 Z6

Descriptors: bats, resource use, morphology.

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NAL call no: QL1 P52

Descriptors: thermoregulation, temperature, roosting, torpor.

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NAL call no: QP351.J68

Descriptors: extrastriate cortex, nervous system, visual area, evolution.

*Bat biology and conservation.* Kunz, Thomas H. & Racey, Paul A. (eds). Smithsonian Institution Press, 1998, i-xvi, p. 1-365. ill. ISBN: 1560988258.

NAL call no: QL737 C5B367 1998

Descriptors: Chiroptera, Bat research conference, symposia papers, meetings.

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NAL call no: QL737 C5B367 1998

Descriptors: hindlimbs, skeletal musculature, blood diet, evolution, skeleton.

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Descriptors: brain, neurons, inferior collicular neurons, neurotransmitters.

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NAL call no: QP33 J681

Descriptors: biomechanics, energy expenditure, flight, hovering flight energetic costs.

**Evolutionary implications of developmental and functional integration in bat wings.** Adams, Rick A. *Journal of Zoology*, London, Oct. 1998, v. 246 (2), p. 165-174. ill. ISSN: 0952-8369.

NAL call no: QL1 J68

Descriptors: wings, forelimb skeleton, foraging, development, evolution., flight.

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NAL call no: QL737 C5B367 1998

Descriptors: Chiroptera, general morphology, wings, biomechanics, skeletal musculature.

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Descriptors: Phyllostomatidae, skull morphology, nectar feeding, food plants, feeding behavior, morphology, craniometric data.



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NAL call no: 381 AR2

Descriptors: protein, kinase A, catalytic subunit, enzymology.

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NAL call no: QL737 C5B367 1998

Descriptors: Chiroptera, wings, biomechanics, skeleton & skin, bat biology.

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NAL call no: 501 L84B

Descriptors: group coordination, learning, vocal learning, acoustic signals.

**Behavioral relevance of perineal glandular chemosignals of the Indian fruit bat, *Pteropus giganteus*.** Jayaprakash, M.; Alexander, K.M. *Journal of Animal Morphology and Physiology*, Jun. 1997, v. 44 (1), p. 9-11. ill. ISSN: 0021-8804.

NAL call no: 444.8 J823

Descriptors: integumentary glands, perineal gland structure & function.

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NAL call no: QH600.C47

Descriptors: chromosomal distribution, differences, genetics, telometric sequences.

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NAL call no: 447.8 AN1

Descriptors: digestive system, evolution, adaptation, parotid gland.

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NAL call no: QP33.J681

Descriptors: care in captivity, captive stress, facultative hypothermia, thermoregulatory mechanism, temperature.

**Intensity of bats *Vespertilio pipistrellus* energetic metabolism at different environmental temperatures.** Kuchkarov, A.; Akhmerov, R.N.; Almatov, K.T. *Uzbekskii Biologicheskii Zhurnal* 1, 1997, P. 56-59. ill. ISSN: 0042-1685.



Language: Russian.

NAL call no: 442.8 UZ1

Descriptors: oxygen consumption, hibernation, temperature.

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NAL call no: 470 C16D

Descriptors: Chiroptera, torpor, air temperature.

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Descriptors: development, morphology, skeletal system, fontanels.

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NAL call no.: 410 J823

Descriptors: metabolic rate, thermoregulation, microenvironments, roosts.

**Bat biology and conservation.** Kunz, Thomas H.; Racey, P.A., International Bat Research Conference (10<sup>th</sup>: 1995, Boston University). Washington: Smithsonian Institution Press, c1998, xiv, 365 p., ill., maps. ISBN: 1560988258 (alk paper).

NAL call no: QL737.C5B367 1998

Descriptors: Bats Congress, wildlife conservation.

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NAL call no: 470 C16D

Descriptors: wing loading, foraging, food availability, habitat utilization.

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NAL call no: S960 W5

Descriptors: age determination, hard tissue parameters evaluation, bone, skeleton.

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NAL call no: QP351.J68

Descriptors: cortex-somatosensory, connections, cortex, anatomy.

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Markovitz, Nancy S.; Pollak, George D. *Hearing Research*, 1993, v. 71 (1-2), p. 51-63.

ISSN: 0378-5955.

Descriptors: auditory physiology, monaural response, neuron.

**Molecular phylogenetics of Stenodermatin bat genera: Congruence of data from nuclear and mitochondrial DNA.** Van den Bussche, R.A.; Baker, R.J.; Wichman, H.A.; Hamilton, M.J.

*Molecular Biology and Evolution*, Sept. 1993, v. 10 (5), p. 944-959. ISSN: 0737-4038.

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Descriptors: Cryptosporidium, mammalian hosts, protozoan parasites, Chiroptera.
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Descriptors: immunochemistry, wounds, amyloidosis.
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Descriptors: nucleotide sequences, RNA, genome analysis, molecular genetics.



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NAL call no: RC117.M9  
Descriptors: blood, lymphatics, infection, digestive system, kidney, liver.

**Normal bat flora.** Smith, W. *Veterinary Record*, 1994, v. 135 (16), p. 388. ISSN: 0042-4900.

NAL call no: 41.8 V641

Descriptors: bacterial diseases, microbial flora, Chiroptera.

**Schizodeme and zymodeme analysis of trypanosomes of the subgenus *Schizotrypanum* from the bat.** Teixeira, L.F.M.; Goncalves, A.M.; Romanha, A.J.; Steindel, M.; Pinto, A.S. *Parasitology Research*, 1993, v. 79 (6), p. 497-500. ref.

NAL call no: QL757 P377

Descriptors: isoenzymes, chemotaxonomy, zymodemes, parasites, protozoa.

**A bat tapeworm, *Vampirolepis ozensis* Sawada (Cestoda: Hymenolepididae) with records of known cestodes from Japanese bats.** Sawada, I. *Bulletin of the Biogeographical Society of Japan*, 1992, v. 47 (3), p. 51-55. ref.

Descriptors: surveys, taxonomy, morphology, parasites, helminths.

**Cobalamin deficiency and the pathogenesis of nervous system diseases.** Metz, J. *Annual Review of Nutrition*, 1992, p. 1259-1279. ISSN: 0199-9885.

NAL call no: QP141.A1A63

Descriptors: nervous system diseases, etiology, vitamin B12 deficiency.

**Ectoparasite mites (Acari) of sympatric Brazilian free-tailed bats and big brown bats in Alabama.**

Durden, L.A.; Best, T.L.; Wilson, N.; Hilton, C.D. *Journal of Medical Entomology*, 1992, v. 29 (3), p. 507-511. ref.

NAL call no: 421 J828

Descriptors: hosts, ectoparasites, wild animals.

**Epidemiology of rabies transmitted by vampire bats.** Ruiz, A.; Diaz, A.M.; Bogel, K.; Meslin, F.X.; Kaplan, M. *Wildlife Rabies Control*, 1992, p. 57-64. ref. Wells Medical Ltd., Tunbridge Wells, UK. ISBN: 1869969545.

Descriptors: parasites, vectors, pathogens, diseases.

**Glauconyussus: A new genus associated with African bats (Acari:Macronyssidae).** Uchikawa, K., *Journal of Medical Entomology*, Landham, MD. The Entomological Society of America, May, 1991, v. 28 (3), p. 446-449. ISSN: 0022-2585.

NAL call no: 421.J828

Descriptors: macronyssidae, biometry, morphology, parasites, new genus.

**Helminth parasites in some Spanish bats.** Alvarez, F.; Rey, J.; Quinteiro, P.; Iglesias, R.; Santos, M.; Sanmartin, M.L. *Wiadomosci Parazytologiczne*, 1991, v. 37 (3), p. 321-329. ref.

NAL call no: 436.8 W63

Descriptors: helminths, parasites.

**The role of positive and negative interspecific associations in the organization of communities of intestinal helminths of bats.** Lotz, J.M.; Font, W.F. *Parasitology*, 1991, v. 103 (2), p. 127-138. ref. ISSN: 0031-1820.

NAL call no: 448.8 P21

Descriptors: ecology, helminths, immunity, parasites, Chiroptera.

- Unusefulness of CO<sub>2</sub>-baited traps for collecting bat ticks in nature.** Estrada, Pena A.; Cruz, J. de la; Daniel, M.; De la Cruz, J.; Pena, A. *Folia Parasitologica*, 1991, v. 38 (4), p. 295-296. ISSN: 0015-5683.  
NAL call no: 436.8 C33  
Descriptors: ectoparasites, hosts, sampling, traps, CO<sub>2</sub>, bait.
- The rabies viruses of bats.** King, A.; Davies, P.; Lawrie, A. *Veterinary Microbiology*, 1990, v. 23 (1-4), p. 165-174. ref.  
NAL call no: SF601 V44  
Descriptors: monoclonal antibodies, biotechnology, viral diseases, rabies virus.
- Role of bats in the natural cycle of arboviruses.** Geevarghese, G.; Banerjee, K. *Current Science*, 1990, v. 59 (1), p. 26-31. ref. ISSN: 0011-3891.  
NAL call no: 475 SCI23  
Descriptors: viral diseases, reservoir hosts, epidemiology, reviews.
- Characterization of plasma membrane polypeptides of Trypanosoma from bats.** Pinho, R.T.; Simone, S.G. de; De Simone, S.G. *Memorias do Instituto Oswaldo Cruz*, 1989, v. 84 (1), p. 13-18. ref.  
NAL call no: 448.9 IN74  
Descriptors: biochemistry, membranes, polypeptides, chemotaxonomy.
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NAL call no: QL1.A1N4  
Descriptors: ectoparasites, hosts, taxonomy, new species.
- Eimeria from bats of the world. II A new species in Tadarida femorosacca from Sonora, Mexico.** Duszynski, D.W.; Reduker, D.W.; Parker, B.B. *Journal of Parasitology*, 1988, v. 74 (2), p. 317-321. ref. ISSN: 0022-3395.  
NAL call no: 448.8 J824  
Descriptors: new species, Taxonomy, morphology, parasites.
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NAL call no: 448.8 J824  
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NAL call no: 448.8 P21  
Descriptors: vectors, life history, intermediate hosts, transmission.
- Parasites of vampire bats.** Mendez, E.; Greenhall, A.M.; Schmidt, U. *Natural History of Vampire Bats*, 1988, p. 191-206. ref. CRC Press, Inc. Boca Raton, FL.

NAL call no: QL737 C52N38 1988

Descriptors: parasites, reviews, hosts, helminths, ectoparasites.

**Transmission of pathogenic microorganisms by vampire bats.** Constantine, D.G.; Greenhall, A.M.; Schmidt, U. *Natural History of Vampire Bats*, 1988, p. 167-189. ref. CRC Press, Inc. Boca Raton, FL. ISBN: 0849367506.

NAL call no: QL737 C52N38 1988

Descriptors: rabies, reviews, vectors, transmission, parasites.

**Babesia vesperuginis: Natural and experimental infections in British bats (Microchiroptera).**

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Descriptors: transmission, vectors, parasites, disease.

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**Detection of Leishmania antibodies in bats.** Morsy, T.A.; Salama, M.M.I.; Abdel Hamid, M.Y.

*Journal of the Egyptian Society of Parasitology*, 1987, v. 17 (2), p. 797-798. ref. ISSN: 1110-0583.

NAL call no: QL757 J65

Descriptors: human diseases, serological surveys, parasites.

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Myers, D.D. *Laboratory Animal Science*, 1987, v. 37 (5), p. 672-674. ref. ISSN: 0023-6764.

NAL call no: 410.9 P94

Descriptors: laboratory animals, new species, taxonomy, parasites.

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Descriptors: Nematoda, mammalian hosts, Chiroptera, host parasite relationships.

**Survival of Blastomyces dermatitidis in the gastrointestinal tract of an orally infected**

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NAL call no: RC117 A1J68

Descriptors: hosts, digestive tract, faeces, infection, isolation.

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NAL call no: QH540 A56

Descriptors: hosts, vectors, transmission, parasites.



**Comparison of isoenzymes of some species of the subgenus *Schizotrypanum* from bats by isoelectrofocusing.** Ebert, F. *Tropenmedizin und Parasitologie*, 1983, v. 34 (2), p. 93-97. ref. NAL call no: 448.8 Z37  
Descriptors: chemotaxonomy, biochemistry, enzymes, parasites.

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NAL call no: 448.8 Am326  
Descriptors: faeces, fungal diseases, *Histoplasma capsulatum*, maintenance in guano.

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NAL call no: 448.8 P21  
Descriptors: parasites, *Trypanosoma*, immunology.

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NAL call no: QL737.C5 B328  
Descriptors: Chiroptera, viral diseases, rabies, incidence.

**Role of immunoglobulin classes in experimental histoplasmosis in bats.** McMurray, D.N.; Stroud, J.; Murphy, J.J.; Carlomagno, M.A.; Greer, D.L. *Dev Comp Immunol*, Summer 1982, v. 6 (3), p. 557-567. ISSN: 0145-305X.  
NAL call no: QR180.D4  
Descriptors: immunoglobulin, classes, role, histoplasmosis.

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NAL call no: QL757.A1S9  
Descriptors: biochemistry, enzymes, nucleic acids, parasites.

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Descriptors: parasites.

**Filaroid nematodes in olfactory mucosa, olfactory bulb, and brain ventricular system of bats.** Lichtenfels, J.R.; Bhatnager, K.P.; Whittaker, F.H.; Frahm, H.D. *Transactions of the American Microscopical Society*, 1981, v. 100 (2), p. 216-219. ref. ISSN: 0003-0023.  
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Descriptors: parasites, helminths.

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NAL call no: 448.8 Am326

Descriptors: pathology, experimental infection, reaction of host to parasite.

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NAL call no: 41.8 AM3

Descriptors: drug therapy, anthelmintics, parasites, helminths,

**A new Cheyletus (Acarina: Cheyletidae) from a bat-roost.** Jeffrey, I.G. *Acarologia*, 1980, v. 21 (1), p. 46-54. fig. ref.

NAL call no: 434.8 Ac1

Descriptors: descriptions, new species, keys.

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NAL call no: 448.8 Am326

Descriptors: immune responses, fungal disease, Histoplasma capsulatum.

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NAL call no: 448.8 Am326

Descriptors: Microchiroptera, protozoan parasites, Trypanosoma.

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NAL call no: SF810.V4

Descriptors: histology, parasites, disease.

**Biology of the trypanosomes of bats.** Marinkelle, C.J. *Biology of the Kinetoplastida*. Lumsden, W.H.R.; Evans, D.A. (eds.), v. 1, 1976, p. 175-216. Academic Press Inc. London, UK.

NAL call no: QL368 K5B5

Descriptors: biology, reviews, life history, parasites.

**Cestodes of the genus Hymenolepis Weinland, 1858 (sensu lato) from bats in North America and Hawaii.** Rausch, R.L. *Canadian Journal of Zoology*, 1975, v. 53 (11), p. 1537-1551.

NAL call no: 470 C16D

Descriptors: new species, morphology, parasites, helminths.

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Descriptors: helminths, parasites, surveys.

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NAL call no: 421 J828  
Descriptors: dwellings, parasites, mite, dermatitis.
- Parasite helminths of bats from southwestern United States and Mexico.** Cain, G.D.; Studier, E.H. *Proceedings of the Helminth Society of Washington*, 1974, v. 41 (1), p. 113-114. ISSN: 1049-233X.  
NAL call no: QL392.J68  
Descriptors: helminths, parasites, Chiroptera.
- Parasitological study of bats.** Sanchez, Acedo C.; Otero, J.; Albala, Perez F.; Acedo, C. Sanchez; Perez, F. Albala. *Revista Iberica de Parasitologia*, 1974, v. 34 (3-4), p. 245-252. ref. ISSN: 0034-9623.  
NAL call no: 436.8 R32  
Descriptors: parasites, vectors, pathogens, diseases, entomology.
- Virus infections in bats.** Sulkin, S.E.; Allen, R. *Monographs in Virology*, 1974, 8: viii, 103p. ref.  
NAL call no: QR301 S9  
Descriptors: transmission, yellow fever, disease transmission, mosquitos.
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NAL call no.: 470 C16D  
Descriptors: helminths, parasites, Chiroptera.
- Humoral and cell-mediated immunity to *Histoplasma capsulatum* during experimental infection in Neotropical bats (*Artibeus lituratus*).** McMurray, D.N.; Thomas, M.E.; Greer, D.L.; Tolentino, N.L., *American Journal of Tropical Medicine and Hygiene*, v. 27 (4), p. 815-821. ill. ISSN: 0002-9637.  
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Descriptors: experimental infection, fungal disease, humoral and cell mediated immunity.
- Lead poisoning in captive wild animals.** Zook, B.C.; Sauer, R.M.; Garner, F.M. *Journal of Wildlife Diseases*, v. 8 (3), p. 264-272. 1972. ISSN: 0090-3558.  
NAL call no: 41.9 W64B  
Descriptors: lead poisoning, captive wild animals.
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NAL call no: 448.8 Am326  
Descriptors: immune response, virus infection, environmental temperatures.

## ENRICHMENT

**Mealworm dispensers as environmental enrichment for captive Rodrigues fruit bats (*Pteropus rodricensis*).** O'Connor, K.I., *Animal Welfare*, Wheathampstead, U.K.: Universities Federation for Animal Welfare, 2000, v. 9 (2), p. 123-137. ISSN: 0962-7286.

NAL call no: HV4701.A557

Descriptors: Pteropus, enrichment, feeding behavior, foraging, feed dispensers.

**Bat enrichment survey.** LeBlanc, Dana. *Animal Keepers' Forum*, Jul. 1999, v. 26 (7), p. 267-285. ill. ISSN: 0164-9531.

NAL call no: QL77.5 A54

Descriptors: Chiroptera, enrichment provisions in captivity, care in captivity, survey.

**Enrichment notebook.** 2<sup>nd</sup> ed. Stark, Beth, American Association of Zoo Keepers, Enrichment Committee, Topeka, KS.: AAZK, c1999, 1 v. (loose leaf); ill. ISBN: 1929672039.

NAL call no: SF408.45.A44 1999

Descriptors: zoo animals, environmental enrichment, housing, handbooks.

**Bat enrichment survey.** LeBlanc, Dana, *Animal Keepers' Forum*, Jul. 1999, v. 26 (7), p. 267-285. Ill. The Lubee Foundation, Inc., Gainesville, FL. ISSN: 0164-9531.

NAL call no: QL77.5 A54

Descriptors: Chiroptera, enrichment in captivity, care in captivity, international survey.

**"Grenades" for bats.** Chag, Mark, *Zoos' Print*, The Lubee Foundation Inc., Gainesville, FL, Oct. 1999, v. 1-14 (1-10), p. 20. ill. ISSN: 0971-6378.

Descriptors: care in captivity, feeding grenade, enrichment.

**Horticultural options for fruit bat enrichment.** Leblanc, Dana, *Anon.* Proceedings of the 1998 joint conference AAZK, EMA, AZH, Indianapolis, IN. Zoological Society, Inc., 1998, p. 1-286. Chapter pagination: 205-212. Ill.

Descriptors: care in captivity, horticultural enrichment, food, plants.

**Social and behavioral well-being of captive bats.** Johnston, Dave S., *Journal of Wildlife Rehabilitation*, Spring, 1997, v. 20 (1), p. 15-18. ill. ISSN: 1071-2232.

NAL call no: SF996.45.J69

Descriptors: Chiroptera, care in captivity, housing techniques, environmental enrichment.

## FEEDING / NUTRITION / METABOLISM.

**Advances in fruit bat nutrition.** Dempsey, Janet L., Fowler, Murray E. & Miller, R. Eric, *Zoo and Wild Animal Medicine: Current Therapy*. 4<sup>th</sup> ed. W.B. Saunders Company, Philadelphia. 1999, i-xxiii, p. 1-747. Chapter pagination: 354-360. ill. ISBN: 0721686648.

NAL call no: SF996 Z66

Descriptors: diet in captivity, dietary formulation, dietary requirements.

**Bat salivary proteins segregate according to diet.** Dumont, E.R.; Etzel, K.; Hempel, D. *Mammalia*, 1999, v. 63 (2), p. 159-166. ill. ISSN: 0025-1461.



NAL call no: 410 M31

Descriptors: diet, salivary glands, diet relationships, proteins.

**Comparative analysis of the digestive efficiency and nitrogen and energy requirements of the phyllostomid fruit-bat (*Artibeus jamaicensis*) and the pteropodid fruit-bat (*Rousettus aegyptiacus*).** Delorme, M.; Thomas, D.W. *Journal of Comparative Physiology B: Biochemical, Systemic and Environmental Physiology*, Mar. 1999, v. 169 (2), p. 123-132. ill. ISSN: 0174-1578.

NAL call no: QP33 J681

Descriptors: biochemistry, energy intake, energy requirements, dietary requirements.

**The diets of bats from southeastern Brazil: The relation to echolocation and foraging behavior.**

Brock, Fenton M.; Whitaker, J.O. Jr.; Vonhof, M.J.; Waterman, J.M.; Pedro, W.A.; Aguiar, L.M.S.; Baumgarten, J.E.; Bouchard, S.; Faris, D.M.; Portfors, C. V.; Rautenbach, N.I.L.; Scully, W.; Zortea, M. *Revista Brasileira de Zoologia*, 1999, v. 16 (4), p. 1081-1085. ref.

NAL call no: QL242 R48

Descriptors: foraging, faeces, prey, diet, feeding behavior.

**The effect of food hardness on feeding behavior in frugivorous bats (*Phyllostomidae*): An experimental study.** Dumont, Elizabeth R., Jun. 1999, *Journal of Zoology*, London. v. 248 (2), p. 219-229. ill. ISSN: 0952-8369.

NAL call no: QL1 J68

Descriptors: food hardness effects on feeding behavior, captive study.

**Field metabolic rates and water uptake in the blossom bat, *Syconycteris australis***

(*Megachiroptera*). Geiser, F.; Coburn, D.K. *Journal of Comparative Physiology B: Biochemical, Systemic and Environmental Physiology*, Mar. 1999, v. 169 (2), p. 133-138. ISSN: 0174-1578.

NAL call no: QP33 J681

Descriptors: ambient temperatures, water uptake, field metabolic rate.

**Diets of juvenile, yearling, and adult big brown bats (*Eptesicus fuscus*) in southeastern Alberta.**

Hamilton, Ian M.; Barclay, Robert M.R., *Journal of Mammalogy*, Aug. 1998, v. 79 (3), p. 764-771. ill. ISSN: 0022-2372.

NAL call no: 410 J823

Descriptors: diets, insects, juvenile, yearling, adult.

**Diet selection and resource use by flying foxes (genus *Pteropus*).** Banack, A. *Ecology*, 1998, v. 79 (6), p. 1949-1967. ref.

NAL call no: 410 EC7

Descriptors: fruits, pollinators, seed dispersal, feeding behavior.

**Dietary strategies of Old World Fruit Bats (*Megachiroptera*, *Pteropodidae*): How do they obtain sufficient protein?** Courts, S.E. *Mammal Review*, 1998, v. 28 (4), p. 185-194. ISSN: 0305-1838.

NAL call no: QL700.M24

Descriptors: diets, proteins, foraging behavior.

- Food and feeding habits of the fruit-eating bat *Carollia perspicillata*.** Quesnel, Victor C. *Living World*, 1997-1998, 1998, p. 28-30. ill. ISSN: 1029-3299.  
Descriptors: food plants, food handling, nocturnal activity, fruit, light.
- The hunting techniques of bats.** Garrido- Garcia, Jose Antonio. *Quercus*, Aug. 1998, v. 150, p. 41-45, ill. ISSN: 0212-0054.  
Descriptors: Chiroptera, habitat management, food capture, diet, foraging.
- Pollen digestion by New World bats: Effects of processing time and feeding habits.** Gerardo, Herrera M.L.; Martinez Del Rio, Carlos. *Ecology*, (Washington DC), Dec. 1998, v. 79 (8), p. 2828-1838. ill. ISSN: 0012-9658.  
NAL call no: 410.EC7  
Descriptors: food plants, Chiroptera, enzymes, digestion.
- Methods for diet study in insectivorous bats.** Kervyn, Thierry. *Arvicola Actes "Amiens 97"*, 1998, p. 53-56. ill. ISSN: 0758-5721.  
Language: French.  
Descriptors: Chiroptera, literature review, feeding analysis techniques, diet analysis methods.
- The diets of British bats (Chiroptera).** Vaughan, N. *Mammal Review*, 1997, v. 27 (2), p. 77-94. ISSN: 0305-1838.  
NAL call no: QL700.M24  
Descriptors: diets, foraging behavior, Chiroptera.
- The diets of two high-flying bats from Africa.** Rydell, J.; Yalden, D.W. *Journal of Zoology*, 1997, v. 242 (1), p. 69-76. ISSN: 0952-8369.  
NAL call no: QL1 J68  
Descriptors: food organisms, morphology, food selection.
- The diets of two phonic types of the bat *Pipistrellus pipistrellus* in Britain.** Barlow, Kate E. *Journal of Zoology*, London, Nov. 1997, v. 243 (3), p. 597-609. ISSN: 0952-8369.  
NAL call no: QL1 J68  
Descriptors: dietary difference, habitat use, prey composition.
- Temperature regulation and metabolism of an Australian bat, *Chalinolobus gouldii* (Chiroptera: Vespertilionidae) when euthermic and torpid.** Hosken, D.J.; Withers, P.C. *Journal of Comparative Physiology B: Biochemical, Systemic and Environmental Physiology*, 1997, v. 167 (1), p. 71-80. ISSN: 0174-1578.  
NAL call no: QP33 J681  
Descriptors: endothermy, metabolic rate, metabolism, temperature regulation.
- Multicentric hyperostosis consistent with fluorosis captive fruit bats (*Pteropus giganteus*), *P. poliocephalus*, and *Rousettus aegyptiacus*).** Duncan, Mary; Crawshaw, Graham J.; Mehren, Kay G.; Pritzker, Kenneth P.H.; Mendes, Maria; Smith, Dale A., *Journal of Zoo and Wildlife Medicine*, 1996, v. 27 (3), p. 325-338. ISSN: 1042-7260.  
NAL call no: SF601 J6  
Descriptors: metabolism, nutrition, veterinary medicine, skeletal system.

- Bioaccumulation of selected organochlorines in bats and tits: Influence of chemistry and biology.** Streit, B.; Winter, S.; Nagel, A. *Environmental Science and Pollution Research International*, 1995, v. 2 (4), p. 194-199. ref.  
Descriptors: nontarget effects, insecticides, residues.
- Feeding habits of grey bats in Kentucky.** Lacki, M.J.; Buford, L.S.; Whitaker, J.O. Jr. *Journal of Mammalogy*, 1995, v. 76 (4), p. 1256-1259. ISSN: 0022-2372.  
NAL call no: 410 J823  
Descriptors: food consumption, food organisms, food selection.
- Nectarivorous feeding mechanisms in bats.** Freeman, P.W. *Biol. J. Linn. Soc.*, 1995, v. 56 (3), p. 439-463. ISSN: 0024-4066.  
NAL call no: QH301.B56  
Descriptors: Chiroptera, nectivory, feeding behavior, functional morphology.
- Prey selection by insectivorous bats: Are essential fatty acids important?** Schalk, G.; Brigham, R.M. *Canadian Journal of Zoology*, 1995, v. 73 (10), p. 1855-1859. ref. ISSN: 0008-4301.  
NAL call no: 470 C16D  
Descriptors: essential fatty acids, prey, body fat, diets, feeding behavior.
- Diet, prey selection and foraging behavior of the orange horseshoe-bat (*Rhinonycteris auranrius*).** Churchill, S.K. *Wildlife Research*, 1994, v. 21 (2), p. 115-130. ref. ISSN: 1035-3712.  
NAL call no: S960 W5  
Descriptors: diets, feeding behavior, prey, predation.
- Differences in the diets of juvenile and adult hoary bats, *Lasiurus cinereus*.** Rolseth, S.L.; Koehler, C.E.; Barclay, R.M.R. *Journal of Mammalogy*, 1994, v. 75 (2), p. 394-398. ISSN: 0022-2372.  
NAL call no: 410 J823  
Descriptors: diets, age.
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NAL call no: QH540.F85  
Descriptors: food selection, foliage, energetics, fractionation.
- Lead concentrations in tissues of fruit bats (*Pteropus* sp.) In urban and non-urban locations.** Hariono, B; Ng, J.; Sutton, R.H., *Wildlife Research*, 1993, v. 20 (3), p. 315-320. ISSN: 1035-3712.  
NAL call no: S960 W5  
Descriptors: digestive system, pollution, toxicology, lead.
- Feeding behavior of the vampire bats *Diaemus youngi* and *Diphylla ecaudata* on smaller birds in captivity.** Uieda, W.; Buck, S.; Sazima, I. *Cienc. Cult.*, 1992, v. 44 (6), p. 410-412.  
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Descriptors: feeding-behavior, *Diaemus youngi*, *Diphylla ecaudata*.

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NAL call no: 410 J823  
Descriptors: diets, pregnancy, nutritive value.

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NAL call no: 470 C16D  
Descriptors: nutrition, predation, prey, digestion, biology.

**Methylmalonic acid metabolism and nervous-system fatty acids in cobalamin-deficient fruit bats receiving supplements of methionine, valine and isoleucine.** Vieira Makings, E.; Chetty, N.; Reavis, S.C.; Metz, J. *The Biochemical Journal*. Rep. South Africa. 1991, v. 275 (2), p. 585-590. ISSN:0264-6021.  
NAL cal no: QP501.B64  
Descriptors: fatty acids, cobalamin, metabolism, neuropathy, deficiency.

**Both valine and isoleucine supplementation delay the development of neurological impairment in vitamin B12 deficient bats.** Vieira, Makings E.; van der Westhuyzen, J.; Metz, J. *International Journal for Vitamin and Nutrition Research*, 1990, v. 60 (1), p. 41-46. ISSN: 0300-9831.  
NAL call no: 389.8 Z33  
Descriptors: vitamin B12, diet therapy, blood, metabolism, complications.

**Demyelination in the spinal cord of vitamin B12 deficient fruit bats.** Duffield, M.S.; Phillips, J.I.; Vieira, Makings E.; Van der Westhuyzen, J.; Metz, J. *Comparative Biochemistry and Physiology C: Comparative Pharmacology and Toxicology*, 1990, v. 96 (2), p. 291-297. ISSN: 0742-8413.  
NAL call no: QP901 C6  
Descriptors: physiology, demyelinating diseases, spinal cord diseases.

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NAL call no: 470.N81  
Descriptors: diets, food availability, food selection.

**The foraging behavior and ecology of animal eating bats.** Fenton, M Brock. *Canadian Journal of Zoology*, Mar. 1990, v. 68 (3), p. 411. ISSN: 0008-4301.  
NAL call no: 470 C16D  
Descriptors: foraging behavior, ecology, animal eating bats.

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NAL call no: 410.M58  
Descriptors: prey selection, big grown bats.

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NAL call no: QL1 J68

Descriptors: diets, food organisms, seasonal variation.

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NAL call no: QL751.B4

Descriptors: reproductive condition, foraging behavior, female, effect.

**Feeding ecology of Tasmanian bat assemblages.** O'Neil, M.G.; Taylor, R.J. *Australian Journal of Ecology*, Mar. 1989, v. 14 (1), p. 19. ISSN: 0307-692X.

NAL call no: QH540.A8

Descriptors: feeding ecology, Tasmanian bat.

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NAL call no: QL751.B4

Descriptors: behavior, sociobiology.

**Foraging ecology and audition in echolocating bats.** Neuweiler, Gerhard. *Trends in Ecology and Evolution*, Jun. 1989, v. 4 (6), p. 160.

NAL call no: QH540 T74

Descriptors: foraging ecology, audition, echolocating.

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NAL call no: S960 W5

Descriptors: feeding behavior.

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NAL call no: 470 C16D

Descriptors: head size, foraging behavior, animal eating bats.

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NAL call no: QL737.C5E3

Descriptors: diets, frugivores, food selection, analysis, nectarivores, Chiroptera.

**Food habits analysis of insectivorous bats.** Whitaker, J.O. Jr.; Kunz, T.H. *Ecological and Behavioral Methods for the Study of Bats*. 1988, p. 171-189. ref.

NAL call no: QL737.C5E3

Descriptors: techniques, predators, prey, biology, ecology, research.

**Methods of nutritional ecology of plant-visiting bats.** Herbst, L.H. *Ecological and Behavioral Methods for the Study of Bats*. Kunz, T.H. (ed.) 1988, p. 233-246. ISBN: 0874745969.

NAL call no: QL737.C5E3

Descriptors: analysis, nectarivores, frugivores, nutrition, Chiroptera.

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NAL call no: 410 J826

Descriptors: feeding behavior, foraging, captive fruit bats.

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NAL call no: QL751.B4

Descriptors: foraging behavior, echolocation, horseshoe bat.

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NAL call no: QP1.C6

Descriptors: metabolism, disease models, nervous system.

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NAL call no: 470 C16D

Descriptors: foraging, habitat use, insectivorous bats.

**A comparison of roosting and foraging behavior of three species of African insectivorous bats, *Rhinolophidae*, *Vespertilionidae*, and *Molossidae*.** Fenton, M. Brock; Rautenbach, I.L.

*Canadian Journal of Zoology*, Dec. 1986, v. 64 (12), p. 2860. ISSN: 0008-4301.

NAL call no: 470 C16D

Descriptors: roosting and foraging behavior, comparison.

**Dissociation of methionine synthetase (EC 2.1.1.13) activity and impairment of DNA synthesis in fruit bats (*Rousettus aegyptiacus*) with nitrous oxide-induced vitamin B-12 deficiency.**

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NAL call no: 389.8 B773

Descriptors: vitamin B-12 deficiency, DNA, synthesis.

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Descriptors: captive insectivorous bats, feeding, food colonies.

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NAL call no: 410 P56

Descriptors: Pteropodidae, energetics, food intake, diets, fruits.

- Lipid composition of the brain in the cobalamin inactivated fruit bat, *Rousettus aegyptiscus*.** van der Westhuyzen, J.; Gibson, J.E. *International Journal for Vitamin and Nutrition Research*, 1984, v. 54 (2-3), p. 205-210. ISSN: 0300-9831.  
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Descriptors: diet in captivity, reconstituted freeze-dried blood, palatability.
- Effect of a vitamin B-12 deficient diet on lipid and fatty acid composition of spinal cord myelin in the fruit bat.** Westhuyzen, J. van der; Cantrill, R.C.; Fernandes, Costa F.; Metz, J. *Journal of Nutrition*, 1983, v. 113 (3), p. 531-537. ref. ISSN: 0022-3166.  
NAL call no: 389.8.J82  
Descriptors: fatty acids, myelin, spinal cord, vitamin B-12 deficiency.
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Descriptors: echolocation, predatory behavior, feeding behavior, foraging.
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NAL call no: 442.8 L62  
Descriptors: vitamin B-12, inactivation, nitrous oxide, methionine, Chiroptera.
- Dietary observations on the red, fig-eating bat, *Stenoderma pafum*, in Puerto Rico.** Scogin, R. *Aliso*, 1982, v. 10 (2), p. 259-261.  
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Descriptors: diets, food sources.
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NAL call no: QP1.C6  
Descriptors: iron balance, vampire bat.

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Humphery-Smith, I. in Evans, D.D. (ed.) *The Management of Australian Mammals in Captivity*,  
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Descriptors: techniques, care in captivity, feeding on prey.

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Descriptors: nerve regeneration, nerve degeneration, synapses, organic chemicals.

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NAL call no: QP351 J6  
Descriptors: lipids, brain, vitamin B-12.

**Amino acid transmitter transport in nerve endings from normal and vitamin B12 deficient fruit bats.** Brennan, M.J.; Cantrill, R.C.; Warner, S.J.; van der Westhuyzen, J.; Fernandes, Costa F.; Kramer, S.; Metz, J. *Brain Research*, Oct. 27, 1980, v. 200 (1), p. 213-215. ISSN: 0006-8993.  
NAL call no: Film S-1779  
Descriptors: nerves, endings, Amino acids, neurotransmitters, dietary deficiency.

**Echolocation and feeding behavior of *Taphozous mauritanus* (Chiroptera: Emballonuridae).**  
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NAL call no: 470 C16D  
Descriptors: feeding behavior, echolocation.

**Synthesis of DNA as shown by the deoxyuridine suppression test is normal in the vitamin B12 deficient fruit bat (*Rousettus Aegyptiacus*).** Miller, H.; Fernandes, Costa F.; Metz, J. *British Journal of Nutrition*, 1980, v. 44 (3), p. 229-235. ref. ISSN: 0007-1145.  
NAL call no: 398.8.B773  
Descriptors: DNA, vitamin B-12.

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Descriptors: folic acid, vitamin B-12.

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NAL call no: 470 C16D  
Descriptors: feeding behavior, echolocation, four species, *Myotis*.



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Descriptors: diets, Chiroptera.
- An experimental analysis of the food location behavior of frugivorous bats.** Sawyer, William B.; Fleming, Theodore H.; Heithaus, E. Raymond. *Ecology*, 1977, v. 58 (3), p. 619. ISSN: 0012-9658.  
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Descriptors: food location, analysis, behavior,
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Descriptors: feeding pattern, fruit bat, captivity.
- Neurological changes in fruit bats deficient in Vitamin B12.** Green, R.; van Tonder, S.V.; Oettle, J.G.; Cole, G.; Metz, J. *Nature*, 1975, v. 254. p. 148-150. ISSN: 0028-0836.  
NAL call no: 472.N21  
Descriptors: neurological changes, vitamin B12. deficiency.
- Nutrition in bats.** Okon, E.E. *Proceedings of the International Bat Research Conference 4*, 1975, p. 299-308. ill.  
Descriptors: Chiroptera, digestive enzymes, diet, feeding behavior, digestive system.
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Descriptors: bats, dietary deficiency.
- Food intake by captive *Myotis lucifugus* and *Epitesicus fuscus* (Chiroptera: Vesperitilonidae).** Coutts, R.A.; Fenton, M.B.; Glen, E. *Journal of Mammalogy*, 1973, v. 54 (4), p. 985-990. ISSN: 0022-2372.  
NAL call no: 410 J823  
Descriptors: food intake, captive, bats.
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Descriptors: feeding, natural conditions, laboratory conditions, interactions.

**Transit time of food through the digestive tract of the bat, *Eptesicus fuscus*.** Lickens, M.M.J.; Eps, J. van; Davis, W.H. *Experimental Medical Surgery*, 1972, v. 29, p. 25-28.

Descriptors: food transit time, digestive tract.

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Descriptors: feeding, interaction, vampire bats, studies.

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NAL call no: 410 J823.

Descriptors: feeding capacities, excretory functions, vampire bats.

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NAL call no: 410 J823.

Descriptors: seasonal food changes, captivity, bat, temperature.

**Attempted "cannibalism" among captive vampire bats.** Wimsatt, W.A. *Journal of Mammalogy*, v. 40 (3), p. 439-440. 1959. ISSN: 0022-2372.

NAL call no: 410 J823.

Descriptors: vampire bats, cannibalism, captivity.

**Raising the young of red bats on artificial diet.** Gates, W.H. *Journal of Mammalogy*, 1938, v. 19, p. 461-464.

NAL call no: 410 J823

Descriptors: young red bats, artificial diet.

## HISTOPATHOLOGY / IMMUNOHISTOCHEMISTRY

**An immunohistochemical study of gut endocrine cells in piscivorous bat (Chiroptera: *Noctilio leporinus*).** Komori, Manabu; Taddei, Valdir A.; Hondo, Eiichi, Kitamura, Nobuo, Pai, Vitalino D.; Choliq, Chairun N.; Yamada, Junzo. *Japanese Journal of Zoo and Wildlife Medicine*, Mar. 2000, v. 5 (1), p. 45-54. ill. ISSN: 1342-6133.

Descriptors: digestive system, endocrine cells, gut, types, endocrine system.

**Histopathology and Immunohistochemistry of bats infected by Australian bat lyssavirus.** Hooper, P.T.; Fraser, G.C.; Foster, R.A.; Storie, G.J. *Australian Veterinary Journal*, Sept. 1999, v. 77 (9), p. 595-599. ISSN: 0005-0423.

NAL call no: 41.8.AU72

Descriptors: Australian bat lyssavirus infection, histopathology, immunohistochemistry.

- Histochemical and electrophoretic analysis of the primary flight muscle of several phyllostomid bats.** Hermanson, John W.; Ryan, James M.; Cobb, Matthew A.; Bentley, Jacqueline; Schutt, William A. Jr. *Canadian Journal of Zoology*, Nov. 1998, v. 76 (11), p. 1983-1992. ill. ISSN: 0008-4301.  
NAL call no: 470 C16D  
Descriptors: skeletal musculature, proteins, biochemical variation, Phyllostomidae.
- Pathologies presented in two captive bat colonies related to problems with air exchange.** Paredes, Jorge; Paras, Garcia Alberto, *American Association of Zoo Veterinarians Annual Conference Proceedings*, 1996, p. 440-442. *Zoological Record*, v. 134, Sect. 19.  
NAL call no: 410 Z73  
Descriptors: housing techniques, diseases and disorders, pathologies, air exchange.
- Some histological and histochemical observations on the fundic gland region of the stomach of insectivorous (*Hipposideros diadema*) and frugivorous (*rousettus amplexicaudatus*) bats.** Guico, G.B.; Maala, C.P. *Philippine Journal of Veterinary Medicine*, 1994, v. 31 (2), p. 48-52. ref. ISSN: 0031-7705.  
NAL call no: 41.8 P53  
Descriptors: glands, histology, histochemistry, digestion, digestive tract.
- Histochemical and biochemical plasticity of muscle fibers in the little brown bat, *Myotis lucifugus*.** Brigham, R.M.; Ianuzzo, C.D.; Hamilton, N.; Fenton, M.B. *Journal of Comparative Physiology B*, 1990, v. 160 (2), p. 183-186. ISSN: 0174-1578.  
NAL call no: QP33 J681  
Descriptors: muscle fibers, plasticity.
- Immunocytochemical studies on the pituitary pars distalis of the Japanese long-fingered bat, *Miniopterus schreibersii fuliginosus*.** Mikami, S.; Chiba, S; Hojo, H.; Taniguchi, E.; Kubokawa, K.; Ishii, S. *Cell and Tissue Research*, Feb. 1988, v. 251 (2), p. 291-299. ISSN: 0302-766X.  
NAL call no: QH581.A1Z4  
Descriptors: anatomy, histology, metabolism, pituitary gland, hormones.
- A histochemical study on the innervation of the cerebral blood vessels in bats.** Ando, K. *Cell and Tissue Research*, 1981, v. 217 (1), p. 55-64. ill. ISSN: 0302-766X.  
NAL call no: QH581.A1Z4  
Descriptors: Miniopterus, Murina, Vespertilio, blood vessels, cerebral, innervation.
- Histoenzymological mapping of alkaline phosphatase and 5-nucleotidase in the medulla oblongata of a microchiropteran bat, *Taphozous melanopogon* Temminck.** Hafiza, B.; Sood, P.P. *Brain Research Bulletin*, Jul.-Aug. 1979, v. 4 (4), p. 467-474. ISSN: 0361-9230.  
Descriptors: brain mapping, alkaline phosphatase metabolism.
- The histological structure of stomach in bat, *Rhinofome kinneari*.** Swarup, B.; Kumar, D.; Sinha, B.N. *The Indian Journal of Medical Research*, Feb. 1971, v. 59 (2), p. 259-264. ISSN: 0971-5916.  
NAL call no: 448.8 In22  
Descriptors: anatomy, histology, stomach, Chiroptera.

## INTESTINAL

**Gastric digestive proteinases of the greater horseshoe bat, *Rhinolophus ferrumequinum*.** Narita, Yuichi; Oda, Sen Ichi; Takenaka, Osamu; Kageyama, Takashi. *Mammal Study*, Jun. 2000, v. 25 (1), p. 17-26. ill. ISSN: 1343-4152.

Descriptors: enzymes, digestion, gastric digestive proteinases.

**An immunohistochemical study of gut endocrine cells in piscivorous bat (*Chioptera Noctilio leporinus*).** Komori, Manabu; Taddei, Valdir A.; Hondo, Eiichi; Kitamura, Nobuo; Pai, Vitalino D.; Choliq, Chairun; Yamada, Junzo. *Japanese Journal of Zoo and Wildlife Medicine*, Mar. 2000, v. 5 (1), p. 45-54. ill. ISSN: 1342-6133.

Descriptors: digestive system, endocrine cells, endocrine system, types.

**An immunohistochemical study of gut endocrine cells in nectarivorous and frugi-nectarivorous phyllostomid bats (*Chiroptera: Anoura caudifer* and *Carollia perspicillata*).** Ashihara, Nagatoshi; Taddei, Valdir A.; Hondo, Eiichi; Kitamura, Nobuo; Pai, Vitalino D.; Campos, Valencio J.D.M.; Choliq, Chairun N.; Yamada, Junzo. *Japanese Journal of Zoo and Wildlife Medicine*, Sept. 1999, v. 4 (2), p. 125-133. ISSN: 1342-6133.

Descriptors: dietary range, gut endocrine cell frequency, gut, digestive system.

**The morphology of the intestine of the entomophagous longfingered bat, *Miniopterus inflatus*: Mucosal topography and possible landmarks.** Makanya, A.N., *Acta Biologica Hungarica*, 1997, v. 48 (1), p. 15-27. ISSN: 0236-5383.

Descriptors: intestine, digestive system, landmarks, morphology, microscopy.

**Salivary pH and buffering capacity in frugivorous and insectivorous bats.** Dumont, Elizabeth R., *Journal of Mammalogy*, Nov. 1997, v. 78 (4), p. 1210-1219. ill. ISSN: 0022-2372.

NAL call no: 410 J823

Descriptors: food, salivary glands, salivary pH & buffering capacity.

**Normal bat flora.** Simpson, V.R., *Veterinary Record*, UK, 1994, v. 135 (20), p. 487-488. ISSN: 0042-4900.

NAL call no: 41.8.V641

Descriptors: microbial flora, intestines, microorganisms, bacterial diseases.

**Normal bat flora.** Smith, W. *Veterinary Record*, UK, 1994, v. 135 (16), p. 388. ISSN: 0042-4900.

NAL call no: 41.8.V641

Descriptors: microorganisms, intestines, microbial flora, diseases.

**Some histological and histochemical observations of the fundic gland region of the stomach of insectivorous (*Hipposideros diadema*) and frugivorous (*Rousettus amplexicaudatus*) bats.** Guico, G.B.; Maala, C.P., *Philippine Journal of Veterinary Medicine*, Dec., 1994, v. 31 (2), p. 48-58. ill. ISSN: 0031-7705.

NAL call no: 41.8 P53

Descriptors: stomach, fundic gland region, histology and histochemistry.



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NAL call no: 470 C16D

Descriptors: prey, nutrition, digestion, biology, Chiroptera.

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NAL call no: RC117 A1J68

Descriptors: fungal parasite survival, survival in gastrointestinal tract, parasites.

**Transit time of food through the digestive tract of the bat.** Luckens, M.M.J.; Eps, J. van; Davis, W.H. *Experimental Medical Surgery*, 1972, v. 29, p. 25-28.

Descriptors: transit time, food, digestive tract.

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NAL call no: 448.8 In22

Descriptors: stomach anatomy and histology, Chiroptera.

**Transit time of food through the digestive tract of the bat, *Eptesicus fuscus*.** Luckens, M.M.; Eps, J. Van; Davis, W.H. *Experimental Medicine and Surgery*, 1971, v. 29 (1-2), p. 25-28.

Descriptors: digestive tract, transit time.

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**Chiropteran muscle biology: A perspective from molecules to function.** Hermanson, John W., Kunz, Thomas H. & Racey, Paul A. (eds). *Bat Biology and Conservation*. Smithsonian Institution Press, Washington, D.C., 1998, i-xvi, 1-365. Chapter pagination: 127-139, ill. ISBN: 1560988258.

NAL call no: QL737 C5B367 1998

Descriptors: Chiroptera, wings, flight muscles, skeletal muscles, structure, function.

**Comparative morphology and functional analysis of the sternum and musculus pectoralis in bats.** Kovalyova, I.M.; Taraborkin, L.A. *Myotis* 36, Dec. 1998, p. 121-131. ill. ISSN: 0580-3896.

Descriptors: Chiroptera, thorax, skeletal musculature, sternum, morphology, shape.

**Histochemical and electrophoretic analysis of the primary flight muscle of several phyllostomid bats.** Hermanson, John W.; Ryan, James M.; Cobb, Matthew A.; Bentley, Jacqueline; Schutt, William A. Jr., *Canadian Journal of Zoology*, Nov. 1998, v. 76 (11), p. 1983-1992. ISSN: 0008-4301.

NAL call no: 470 C16D

Descriptors: pectoralis muscles, muscular system, type IIa muscle fibers.

- Contractile function of a flight muscle over the range of hibernation temperature in bats.** Cho, Y.M.; Oh, Y.K.; Choi, I.H.; Jung, N.P.; Shin, H.C., *Korean Journal of Zoology* (Korea Republic), Jan. 1996, v. 39 (1), p. 98-105.  
NAL call no: 410.9 H19  
Descriptors: muscle contraction, hibernation temperature.
- Histochemical and myosin composition of vampire bat (*Desmodus rotundus*) pectoralis muscle targets a unique locomotory niche.** Hermanson, John W.; Cobb, Matthew; Schutt, William A.; Muradali, Farouk; Ryan, James M., *Journal of Morphology*, 1993, v. 217 (3), p. 347-356. ISSN: 0362-2525.  
NAL call no: 444.8 J826  
Descriptors: muscular system, evolution, adaptation, biophysics, biochemistry.
- Comparative morphology of ventral muscles in bats.** Kovaleva, I.M. *European Bat Research 1987*. Proceedings of the Fourth European Bat Research Symposium. Prague, Czechoslovakia. Aug. 18-23, 1987. Charles University Press, Prague. 1988: i-xxiii, 1-718. Chapter pagination 19-24. ill.  
Descriptors: Chiroptera, skeletal musculature, ventral muscles, comparative morphology.
- Pressure regulation in muscle of unanesthetized bats.** Slaaf, D.W.; Reneman, R.S.; Wiederhielm, C.A. *Microvascular Research*, 1987, v. 33 (3), p. 315-326. ill. ISSN: 0026-2862.  
Descriptors: skeletal musculature, haemodynamics, blood pressure regulation.
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NAL call no: QL737.C5 B328  
Descriptors: cytoplasmic inclusions, lipid droplets, mitochondria, enzymes, ventricle.
- Activity of the primary downstroke musculature during flight in Phyllostomatid, Molossid and Vespertilionid bats.** Altenbach, S. *Bat Research News*, 1981, v. 22 (4), p. 31. ISSN: 0005-6227.  
NAL call no: QL737.C5 B328  
Descriptors: Chiroptera, muscle function, downstroke muscles, flight.
- Localization of brain stem motoneurons innervating the laryngeal muscles in the rufous horseshoe bat, *Rhinolophus rouxi*.** Schweizer, H.; Ruebsaman, R.; Ruehle, C. *Brain Research*, Dec. 28, 1981, v. 230 (1-2), p. 41-50. ISSN: 0006-8993.  
NAL call no: Film S-1779  
Descriptors: laryngeal muscles, innervation, motor neurons, anatomy.
- A comparative study on the fine structure of tongue and cricothyroid muscle of the bat, *Myotis gisescens*, as revealed by thin section and freeze-fracture techniques.** Reger, J.F. *Journal of Ultrastructure Research*, Jun. 1978, v. 63 (3), p. 275-286. ISSN: 0022-5320.  
NAL call no: 440.8 J822  
Descriptors: anatomy, histology, ultrastructure, diagnostic imaging.

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Cho, Y.; Sidie, J.M.; DeBruyn, P.P. *Journal of Ultrastructure Research*, Nov. 1972, v. 41 (3), p. 344-357. ISSN: 0022-5320.

NAL call no: 440.8 J822

Descriptors: muscles, cytology, anatomy, histology.

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Descriptors: bats, energetics.

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NAL call no: 442.8 B77

Descriptors: Flying foxes, physiology.

**The physiology of bat flight.** Thomas, S.P. *Recent Advances in the Study of Bats: Joint Meeting of the Seventh International Bat Research Symposium*. Aberdeen, Scotland. aug. 19-24, 1985.

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NAL call no: QL737.C5R29

Descriptors: bats, flight, physiology.

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NAL call no: QL876.B5

Descriptors: melatonin, influence, reproductive physiology.

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Descriptors: physiological, ecological, adaptation, insectivorous bats.

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- Seasonal changes in circulating testosterone and androstenedione concentration and their correlation with the anomalous reproductive pattern in the male India sheath-tailed bat, *Taphozous longimanus*.** Singh, U.P.; Krishna, A. *Journal of Experimental Zoology*, Jun. 15, 2000, v. 287 (1), p. 54-61. ill. ISSN: 0022-104X.  
NAL call no: 410 J825  
Descriptors: weight, plasma, serum, hormones, testosterone, androstenedione.
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NAL call no: 410 J823  
Descriptors: reproductive system, milk, composition, energy content.
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- Influence of torpor on milk protein composition and secretion in lactating bats.** Wilde, Colin J.; Knight, Christopher H.; Racey, Paul A., *Journal of Experimental Zoology*, Jun. 15, 1999, v. 284 (1), p. 35-41. ill. ISSN: 0022-104X.  
NAL call no: 410 J825  
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NAL call no: 470 C16D  
Descriptors: lipids, sperm, fertilization, reproductive system, sperm storage.
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NAL call no: 410 J823  
Descriptors: reproduction, copulation, birth, lactation.
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Descriptors: ovary, polyovular follicle, seasonal occurrence.



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- Pituitary adrenocorticotrophic (ACTH) cells during reproductive cycle in a vespertilionid bat, *Scotophilus heathi*.** Singh, U.P.; Krishna, A. *Acta Biologica Hungarica*, 1997, v. 48 (4), p. 409-420. ill. ISSN: 0236-5383.  
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- The effects of contraceptive implants on the behavior of female Rodrigues fruit bats, *Pteropus rodricensis*.** Hayes, K.T.; Feistner, A.T.C.; Halliwell, E.C. *Zoo Biology*, 1996, v. 15 (1), p. 21-36. ISSN: 0733-3188.  
NAL call no: QL77.5 Z6  
Descriptors: melengesterol, contraceptives, bats.
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Descriptors: behavior, biophysics, endocrine system, reproductive system.
- Inhibitory effects of melatonin on testosterone but not on androstenedione production during winter in the vespertilionid bat, *Scotophilus heathi*.** Singh, Kavita; Krishna, A. *Journal of Pineal Research*, 1995, v. 19 (3), p. 127-132. ISSN: 0742-3098.  
Descriptors: melatonin, testosterone, androsterone, luteinizing hormone.

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Descriptors: genetics, Spermatocytes, X-Chromosome, Chiroptera.
- Reproductive biology of the cape serotine bat, *Eptesicus capensis* in the Transvaal, South Africa.** van der Merwe, M. *South African Journal of Zoology*, Jan. 1994, v. 29 (1), p. 36-39. ISSN: 0254-1858.  
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Descriptors: reproduction, reproductive biology, Chiroptera.
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Descriptors: metabolism, physiology, reproductive system, climatology.
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- Reproductive biology of the female oriental frosted bat (*Vespertilio orientalis*) in northern Japan.-**  
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NAL call no: 41.9 T5762  
Descriptors: sperm storage in uterus, ovary, histology, hibernation, sperm.
- Changes in the structure of endometrial epithelial glycocalyx during the period from sperm storage to early pregnancy in the Japanese house bat, *Pipistrellus abramus*.** Mori, T.; Uchida, T.A. Sixtieth annual meeting of the Zoological Society of Japan, Kyoto, Japan. Oct. 4-6, 1989. *Zool Sci*, Tokyo, v. 6, (6), p. 1212.  
NAL call no: QL1.Z68  
Descriptors: sperm storage, pregnancy, changes.
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Descriptors: male reproductive pattern, histology, testes.

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NAL call no: QL1 J68  
Descriptors: care of the young, suckling behavior.
- Delayed capacitation of sperm in the Japanese house bat, *Pipistrellus abramus*.** Uchida, T.A.; Mori, T.; Son, S.W. *Journal of the Mammalogical Society of Japan*, v. 13 (1), p. 1-10. 1988.  
Descriptors: sperm, delayed capacitation, Japanese house bat.
- A new pattern of early embryonic development in the seasonally breeding non-hibernating lesser yellow house bat, *Scotophilus Borbonicus* E. geoffroy 1803 Chiroptera vespertilionidae.** Van der Merwe, N.J.; Rautenbach, I.L.; Penzhorn, B.L. *Annals of the Transvaal Museum*, 1988, v. 34 (24), p. 551-556.  
Descriptors: embryonic development, new pattern, lesser yellow house bat.
- Ovarian function in the captive black mastiff bat, *Molossus ater*.** Rasweiler, J.J. IV. *Journal of Reproduction and Fertility*, (England) Jan. 1988, v. 82 (1), p. 97-111. ISSN: 0022-4251.  
NAL call no: 442.8 J8222  
Descriptors: ovarian function, black mastiff bat.
- The placenta and fetal membranes of the lesser yellow house bat, *Scotophilus borbonicus* E. geoffroy 1803 Chiroptera Vespertilionidae.** van der Merwe, N.J.; Rautenbach, I.L. *South African Journal of Zoology*, 23 (4), p. 320-327. 1988. ISSN: 0254-1858.  
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Descriptors: placenta and fetal membranes, lesser yellow house bat.
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NAL call no: QL737.C5E3  
Descriptors: reproductive status, sex determination, methodology, Chiroptera.
- Reproduction of two rare *Pipistrellus* species with special attention to the fate of spermatozoa in their female genital tracts.** Son, S.W.; Mori, T.; Yoon, M.H.; Uchida, T.A. *Journal of the Mammalogical Society of Japan*, 1988, v. 13 (2), p. 77-92.  
Descriptors: spermatozoa, fate, genital tracts.
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NAL call no: QL1 J68  
Descriptors: reproduction, behavior, breeding habits, shared nursing.
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Descriptors: sperm ducts, seminal vesicles histopathology.
- Testicular migration, spermatogenesis, temperature regulation and environment of sheath-tail bat, *Taphozous georgianus*.** Jolly, S.E.; Blackshaw, A.W. *Journal of Reproduction and*

*Fertility*, Nov. 1988, v.84 (2), p. 447-455. ISSN: 0022-4251.

NAL call no: 442.8 J8222

Descriptors: testicular migration, spermatogenesis, temperature regulation.

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NAL call no: QL1 J68

Descriptors: embryology, delayed development, influencing factors.

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NAL call no: QL1.Z68

Descriptors: morphology epithelial cells, sperm storage.

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Descriptors: reproductive behavior, care of young, maternal behavior, reproduction.

**Morphology of thyroid C-cells and parathyroid glands in summer-active little brown bats, *Myotis lucifugus lucifugus*, with particular reference to pregnancy and lactation.** Kwiecinski, G.G.; Wimsatt, W.A.; Krook, L. *American Journal of Anatomy*, Apr. 1987, v. 178 (4), p. 421-427.

ISSN: 0002-9106.

NAL call no: 447.8 AM32

Descriptors: morphology, thyroid cells.

**Post-natal growth and energetics of suckling bats.** Kunz, T.H. Cambridge University Press, London, 1987. p. 395-420. ill.

Descriptors: biometrics, digestion, nutrition, energy requirements, growth rate.

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NAL call no: 442.8 J8222

Descriptors: receptivity, male, female, spermatozoa.

**Rearing orphan *Pteropus* spp. (Chiroptera: Pteropidae) for release to the wild.** Luckhoff, H. *Aust. Mammal*, 1987, v. 10 (2), p. 127-128.

Descriptors: care in captivity, hand rearing, techniques.

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NAL call no: 442.8 AU72

Descriptors: seasonal changes, spermatogenesis, plasma testosterone.

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*Anatomy*, Apr. 1987, v. 178 (4), p. 335-340. ISSN: 0022-4251.

NAL call no: 447.8 AM32

Descriptors: ovulation, embryonic development, timing.

**Control of sex steroid-binding protein in the male little brown bat, *Myotis lucifugus*, relationship of plasma thyroxine levels to the induction of plasma sex steroid-binding protein in immature males.** Kwiecinski, G.G.; Damassa, D.A.; Gustafson, A.W. *Journal of Endocrinology*, 1986, v. 110 (2), p. 271-278.

NAL call no: 448.8 J8293

Descriptors: sex steroid-binding protein, thyroxine levels, plasma.

**Implications of prolonged sperm storage from the viewpoint of capacitation in the Japanese house-dwelling bat, *Pipistrellus abramus*.** Mori, T.; Son, S.W.; Uchida, T.A. Fifth International Symposium on Spermatology, Fujiyoshida, Japan. Aug. 25-29, 1986. *Dev Growth Differ*, v. 28 (suppl.), p.74.

NAL call no: QL951 E4

Descriptors: prolonged sperm storage, implications.

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Descriptors: maternal care, postnatal development, bats.

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NAL call no: QP1.P4

Descriptors: metabolic strategies, reproduction.

**Relationships between morphological changes of microvillous fuzz filaments and release of stored spermatozoa from the endometrial epithelium in the Japanese house-dwelling bat, *Pipistrellus abramus*.** Mori, T.; Uchida, T.A. *Fifty-Seventh Annual Meeting of the Zoological Society of Japan*, Fukuoka, Japan. Oct. 10-12, 1986. *Zool Sci* (Tokyo) v. 3 (6).

NAL call no: QL1.Z68

Descriptors: morphology, fuzz filaments, spermatozoa.

**The annual activity and breeding cycles of Gould's long eared bat, *Nyctophilus gouldi* (Microchiroptera: Vespertilionidae).** Phillips, W.R.; Inwards, S.J., *Australian Journal of Zoology*, 1985, v. 33 (2), p. 111-126. ISSN: 0004-959X.

NAL call no: 410 Au73

Descriptors: reproduction, seasonal functions, breeding season, sexual maturation.

**Annual variations in plasma sex steroid-binding protein and testosterone concentrations in the adult male little brown bat: Relation to the asynchronous recrudescence of the testis and accessory reproductive organs.** Gustafson, A.W.; Damassa, D.A. *Biology of Reproduction*, Dec. 1985, v. 33 (5), p. 1126-1137. ISSN: 0006-3363.

NAL call no: QL876.B5

Descriptors: variations, sex-steroid binding protein, testosterone, bat.

- Control of plasma sex steroid-binding protein (SBP) in the little brown bat. Effects of thyroidectomy and treatment with L-and D-thyroxine on the induction of SBP in adult males.** Damassa, D.A.; Gustafson, A.W.; Kwiecinski, G.G.; Pratt, R.D., *Biology of Reproduction*, 1985, v. 33 (5), p. 1113-1146. Ill. ISSN: 0006-3363.  
NAL call no: QL876.B5  
Descriptors: plasma, sex steroid binding protein, thyroxine, effect on plasma proteins.
- Prolonged survival of the Graafian follicle and fertilization in the Japanese greater horseshoe bat, *Rhinolophus ferrumequinum nippon*.** Oh, Y.K.; Mori, T.; Uchida, T.A. *Journal of Reproduction and Fertility*, Jan. 1985, v. 73 (1), p. 121-126. ISSN: 0022-4251.  
NAL call no: 442.8 J8222  
Descriptors: Graafian follicle, survival, fertilization.
- Relationship of food intake to the induction of plasma sex steroid-binding protein and testicular activity in immature male little brown bats, *Myotis lucifugus lucifugus*.** Damassa, D.A.; Gustafson, A.W. *Journal of Reproduction and Fertility*, Jul. 1985, v. 74 (2), p. 701-798. ISSN: 0022-4251.  
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Descriptors: food intake, sex-steroid binding protein, testicular activity.
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Descriptors: metabolism, drug effects, pharmacology, physiology.

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NAL call no: QL1 J68

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NAL call no: QL737 C5B367 1998

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NAL call no: 410 J823

Descriptors: gene flow, genetic variance, gene pool, population structure.

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Descriptors: respiratory gas transport, gas exchange control, flight demands of torpor.

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NAL call no: QL737.C5 B328

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NAL call no: QP33.J68

Descriptors: behavior, echoacoustical information, sense organs, visual information.

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Sandra; Weimersheimer, Rubi Jose; De Paz, Villafan Octavio; Hernandez, Baumgarten Eliseo; Batalla, Campero Diodoro, *Veterinaria*, Mexico, 1996, v. 27 (4), p. 339-342. ISSN: 0301-5092.

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NAL call no: RC681 A1C8

Descriptors: bleeding potential, salivary plasminogen, tissue plasminogen.

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Descriptors: fibrinolytic agents, plasmids, recombinant proteins.

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Descriptors: oxygen demand, ventilation frequency, relationship.

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NAL call no: QH442.A1G4

Descriptors: plasminogen activators, genetics, DNA, kidney physiology.

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NAL call no: QP351.J68

Descriptors: morphology, nervous system, physiology, neural coordination.

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NAL call no: 381 J824

Descriptors: fibrin metabolism, salivary glands, plasminogen activators metabolism.

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Descriptors: ventilation rate, resting bats, measuring.

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NAL call no: QL737.C5 B328

Descriptors: Chiroptera, bibliographies, recent literature.

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NAL call no: QL737.C5 B328

Descriptors: Chiroptera, bibliographies, recent publications.

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NAL call no: QL737.C5 B328

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NAL call no: RB145.A1B57

Descriptors: plasminogen inactivators, fibrin, fibrinogen, activator.

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NAL call no: 381 J824

Descriptors: cloning, molecular, DNA, genetics.

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Descriptors: prolactin, anterior pituitary, cells.

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Descriptors: warm, cols, receptor activity, bats, mice.

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## SELECTED WEB SITE REFERENCES FOR BATS

AZA Bat Taxon Advisory Group.

[www.riverbanks.org/battag/](http://www.riverbanks.org/battag/)

From the American Zoo and Aquarium Association. Education, species listing, husbandry manual, regulatory, enrichment and links.

Bat Atlas.

<http://sves.anu.edu.au/associated/batatlas/index.html>

Up-to-date information on flying-foxes, especially in Australia.

Bat Brood and Nesting Boxes.

<http://dragonet.com/bat/>

Purchase bat brooding and nest boxes.

Bat Conservation International.

[www.batcon.org/](http://www.batcon.org/)

Bat information, conservation information, publications, annual report.

Bat Conservation and Management.

[www.batmanagement.com/](http://www.batmanagement.com/)

Services related to bats, roosts, links, etc.

Bat Echolocation.

[www.bats.org.uk/batinfo/batdets.htm](http://www.bats.org.uk/batinfo/batdets.htm)

Information on bat sounds, recorded sounds for listening plus bat detector supplies.

Bat Ecology and Bioacoustic Lab. - Bristol.

[www.bio.bris.ac.uk/research/bats/batpage.htm](http://www.bio.bris.ac.uk/research/bats/batpage.htm)

Journal papers, books, short works, etc. Bat web, bioacoustics.

Bat Facts.

[www.si.edu/resource/faq/nmnh/batfacts.htm](http://www.si.edu/resource/faq/nmnh/batfacts.htm)

General information on bats from the Smithsonian Institution.

Bat Flight.

[www.nurseminerva.co.uk/adapt/bat.htm](http://www.nurseminerva.co.uk/adapt/bat.htm)

Good information on bat flight with structure, anatomy and muscle action diagrams and explanations plus references.

Bat Lyssavirus Information for Medical Practitioners.

[www.health.gov.au/pubhlth/strateg/communic/lyshlth.htm](http://www.health.gov.au/pubhlth/strateg/communic/lyshlth.htm)

Information on pre and post exposure and treatment plus State and Territory Public Health contacts from the Australian Department of Public Health and Ageing.

BATS - Management Initiatives for the Sustainability of Bat Populations.  
<http://users.erols.com/nolan/vivian/bats.htm>  
Lots of good information on managing and sustaining bat populations.

Bat Printout.  
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Information on bats, animal printouts, label me printouts for kids.

Bat Research Laboratory.  
<http://klingon.iupucs.iupui.edu/~bat/>  
Biosonar models for research.

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<http://thames.northnet.org/bats>  
A journal about bats, bat researchers and bat workers. Papers, meetings, etc. Electronic or hard copies by subscription.

Bat Links.  
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Information links for bats.

Bat Thematic Unit.  
[www.cccoe.k12.ca.us/bats/welcome.html](http://www.cccoe.k12.ca.us/bats/welcome.html)  
Resources, publications, science, art, environment.

Build a Bat House.  
<http://lancaster.unl.edu/enviro/pest/factsheets/265-95.htm>  
Bat houses for sale. Various models.

Big Brown Bat.  
<http://wildwnc.org/af/brownbat.html>  
General information of the Big Brown Bat from the Nature Center.

Big Brown Bat Coloring Page.  
<http://dep.state.ct.us/burnatr/wildlife/kids/batcol.htm>  
Information and coloring page for kids from the Connecticut Department of Environmental Protection.

Big Fruit Bat.  
[www.zooregon.org/cards/Rainforest/bat.fruit.big.htm](http://www.zooregon.org/cards/Rainforest/bat.fruit.big.htm)  
General information about the Big Fruit Bat from the Oregon Zoo.

Biosis resource Guide - Mammalia - Chiroptera.  
[www.biosis.org.uk/zdocs/zoolinfo/mam\\_chir](http://www.biosis.org.uk/zdocs/zoolinfo/mam_chir)  
Information on bats and links.

Build a Bat House.

<http://lancaster.unl.edu/enviro/pest/factsheets/265-95.htm>

From the University of Nebraska Cooperative Extension. Instructions on how to build a bat house.

Build a Simple Bat detector.

<http://pw1.netcom.com/~t-rex/BatDetector.html>

Instructions on how to build a simple bat detector plus kits and assembled detectors.

Canadian Bat Resources.

[www.cancaver.ca/bats/](http://www.cancaver.ca/bats/)

Information on Canadian bats and conservation.

Centre chauves-sauves Suisse occidentale/Swiss Bat Centre.

[www.ville-ge.ch/musinfo/mhng/cco/](http://www.ville-ge.ch/musinfo/mhng/cco/)

Database of more than 900 scientific bibliographic references in English and French.

Chiroptera Cabin Company.

[www.chiropteracabins.com](http://www.chiropteracabins.com)

Cabins and condos for Chiroptera Cuties. Bat houses, cabins, boxes, condos.

Chiroptera Links.

<http://kalan.freeyellow.com/page39.html>

Information links for bats.

Chiroptera Neotropical.

[www.unb.br/ib/zoo/chiroptera/](http://www.unb.br/ib/zoo/chiroptera/)

Newsletter of the World Conservation Union & Chiroptera specialists Group. Articles, news, publications, links.

Chiroptera Nightfliers.

[www.ucmp.berkeley.edu/mammal/eutheria/chiroptera.html](http://www.ucmp.berkeley.edu/mammal/eutheria/chiroptera.html)

Fossil records, Life history & Ecology, Systematics morphology.

Coalition of North American Bat Working Groups.

[www.batworkinggroups.org/](http://www.batworkinggroups.org/)

Information on conserving bats and their habitat, chat discussion groups, etc.

Discovery on Line - Bat hangouts.

[www.discovery.com/news/features/bats/bats.html](http://www.discovery.com/news/features/bats/bats.html)

Slide shows and miscellaneous information on bats.

D.I.Y. Bat Detector (low cost).

[www.btinternet.com/~mr.pentops.bat.htm](http://www.btinternet.com/~mr.pentops.bat.htm)

A project to convert a small transistor radio into an ultrasonic detector for listening to bats. Instructions on how to do it.



The Evolution Store.

[www.evolutionnyc.com/IBS/SimpleCat/Shelf/ASP/Hierarchy/020y.html](http://www.evolutionnyc.com/IBS/SimpleCat/Shelf/ASP/Hierarchy/020y.html)

Prints, books, medical models, fossils, etc.

Geo Zoo Mammals - Bats.

[www.geobop.com/Mammals/Chiroptera/](http://www.geobop.com/Mammals/Chiroptera/)

Dental formula, information and links for bats.

The Hoary Bat.

[www.ireseau.com/usagers/marcelg/chsou\\_an.htm](http://www.ireseau.com/usagers/marcelg/chsou_an.htm)

General information about the Canadian Hoary bat and links.

House Bat Management - USGS.

[www.npwrc.usgs.gov/resource/1998/housebat.htm](http://www.npwrc.usgs.gov/resource/1998/housebat.htm)

Information and procedures on managing house bats, hazards, problems, public health hazards, repellents, bat proofing, etc.

Infant Insectivorous Bat Rehabilitation.

[www.skypoint.com/members/mikefry/bat.html](http://www.skypoint.com/members/mikefry/bat.html)

Information on raising and rehabilitating of infant insectivorous bats.

Kaushik Ghose: attention in the bat's echolocation system.

[www.wam.umd.edu/~kghose/research.html](http://www.wam.umd.edu/~kghose/research.html)

Research information from the University of Maryland Bat Lab and links.

Links to Bat Web Sites - USGS.

[www.mesc.usgs.gov/links/bat\\_web\\_sites.html](http://www.mesc.usgs.gov/links/bat_web_sites.html)

Midcontinental Ecological Science Center with links to various bat web sites.

Little Brown Bat.

[www.wildlife.state.nh.us/Brownbat\\_facts.htm](http://www.wildlife.state.nh.us/Brownbat_facts.htm)

Facts about the Brown Bat from the University of New Hampshire Cooperative Extension.

Lube Foundation Bat Collection.

[www.cafl.com/lubee/collect.htm](http://www.cafl.com/lubee/collect.htm)

A unique collection of bats housed in captivity, including the world's largest and smallest bat.

Mammal Image Library Catalog.

[www.emporia.edu/biosci/ms/chiro.htm](http://www.emporia.edu/biosci/ms/chiro.htm)

Order Chiroptera. Slides of Chiroptera Families.

Mexican Free-Tailed Bat.

[www.thewildones.org/Animals/mexfree.html](http://www.thewildones.org/Animals/mexfree.html)

General information about the Mexican Free-Tailed Bat plus other information about bats for kid. In Spanish and English.

Model Systems in Neuroethology-Echolocation in the Bat.

[http://soma.npa.uiuc.edu/courses/phys/490b/models/bat\\_echolocation/bat\\_echolocation.html](http://soma.npa.uiuc.edu/courses/phys/490b/models/bat_echolocation/bat_echolocation.html)

Information on echolocation and the auditory cortex in bats.

North American Symposium on Bat Research.

[www.nasbr.com/](http://www.nasbr.com/)

A society to promote and develop the scientific study of bats. workshops and conferences.

Order Chiroptera.

<http://animaldiversity.ummz.umich.edu/chordata/mammalia/chiroptera.html>

Information on Megachiroptera and Microchiroptera from the University of Michigan Museum of Zoology.

Rachel's Bat Basics.

<http://luna.cas.usf.edu/~rviggian/batspage.htm>

Basic bat biology and links to other bat sites.

Scott's Bat House Page.

<http://ucs.orst.edu/bat/bathome.htm>

Bat house designs and links to other sites.

South-Eastern Australia Bat Call Library.

<http://batcall.csu.edu.au/batcall/batcall1.html>

A directory of recorded bat calls and an exchange for bat calls. A central source of reference calls of SE Australian bats.

Vampire Bat.

[www.scz.org/animals/b/vampire.html](http://www.scz.org/animals/b/vampire.html)

General information on vampire bats from the Sedgwick County Zoo plus other information.

Walker's Mammals of the World Online - Order Chiroptera.

[www.press.jhu.edu/books/chiroptera.html](http://www.press.jhu.edu/books/chiroptera.html)

Information on bat families from Johns Hopkins University Press.

Western Red Bat.

[www.gf.state.az.us/frames/fishwild/ngame\\_m.htm](http://www.gf.state.az.us/frames/fishwild/ngame_m.htm)

General information on the Western Red Bat.





## Services Available to Individuals

The National Agricultural Library (NAL) supplies agricultural materials not found elsewhere to other libraries and information centers. Submit requests **first to your local library resources**. In the United States, possible sources are public libraries, state libraries, land-grant university or other large research libraries within a state. In other countries submit requests through major university, national, or provincial institutions.

If the publications are not available from these sources, have your library submit requests to NAL with a statement indicating their non-availability. Submit one request per page following the information below.

**Information for the Library** (The following information is provided to assist your librarian in obtaining the required materials.)

**Interlibrary Loan Service** -- Photocopies are available on interlibrary loan for a fee. Submit a separate interlibrary loan form or request for each item. If the citation is from an NAL database (AGRICOLA, *Bibliography of Agriculture*, or the NAL Catalog) and the call number is given, please include it. Willingness to pay charges must be indicated on the form. Materials in NAL's collection are loaned only to other U.S. and Canadian libraries. The following materials are not loaned: serials; rare, reference, and reserve books; microforms; and proceedings of conferences or symposia. Photocopy or microform of non-circulating publications may be requested for a fee provided that the request does not exceed 50 pages per item. Request must also include copyright compliance -- Pre-printed forms must contain your signature to indicate copyright compliance. On e-mail requests include the complete Statement of Copyright Compliance ("I have read the warning on copyright restrictions and accept full responsibility for compliance."), **your full name, date, and telephone number in each request**. Libraries may indicate compliance by including the initials of one statement, either "CCL" for compliance with the copyright law or "CCG" for compliance with Copyright Guidelines or a statement that the request complies with U.S. Copyright Law or other acceptable copyright laws (i.e. IFLA, CLA, etc.). Libraries must also provide authorizing official's name. Requests will be rejected if this information is not included.

### Charges:

- Photocopy from paper, or paper copy of microfilm and microfiche for domestic delivery -- \$13.00 up to 50 pages. Photocopy from paper, or paper copy of microfilm and microfiche for international delivery -- \$16.00 up to 50 pages. (International delivery via Internet is \$13.00.)
- Duplication of NAL-owned microfilm -- \$20.00 per reel
- Duplication of NAL-owned microfiche -- \$13.00 for each 5 fiche

**Billing** -- Charges include postage and handling, and are subject to change. Invoices are issued quarterly by the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161. Phone: (703) 605-6640. Establishing a deposit account with NTIS is encouraged. **DO NOT SEND PREPAYMENT.**

### Send Requests to:

USDA, National Agricultural Library  
Document Delivery Services Branch, PhotoLab  
10301 Baltimore Ave., NAL Bldg.  
Beltsville, Maryland 20705-2351

**FAX:** 301-504-5675  
**Ariel IP address:** ariel.nal.usda.gov  
**E-mail:** lending@nal.usda.gov

Contact the Access Services, Document Delivery Services Branch at (301) 504-6503 or via Internet at [access@nal.usda.gov](mailto:access@nal.usda.gov) with questions or comments about this policy.



## Services Available to Libraries, Institutions and Organizations

The National Agricultural Library (NAL) accepts requests from libraries and other organizations in accordance with the national and international interlibrary loan code and guidelines. In its national role, NAL supplies copies of agricultural materials not found elsewhere. Submit requests to major university libraries, national or provincial institutions or network sources prior to sending requests to NAL. If the needed publications are not available from these sources, submit requests to NAL with a statement indicating their non-availability. **Materials in NAL's collection are not loaned outside the United States; however, copies of materials may be provided.** There is a limit of 50 pages per item to comply with copyright law.

**AGLINET** -- Requesters in countries with an AGLINET library are encouraged to make full use of that library and its networking capabilities. As an AGLINET participant, NAL provides free document delivery service for materials published in the United States to other AGLINET participants.

**Requests** -- Submit requests on the American Library Association (ALA) or the International Federation of Library Associations and Institutions (IFLA) interlibrary loan form, or via electronic mail, Ariel™, or facsimile. (See further details under *For Electronic Access and Delivery* below.)

### Charges:

- Photocopy, paper copy of microfilm and microfiche – \$13.00 up to 50 pages if mailed to domestic address. \$16.00 if mailed to international address. \$13.00 if sent via Internet.
- Duplication of NAL-owned microfilm—\$20.00 per reel
- Duplication of NAL-owned microfiche—\$13.00 for each 5 fiche or portion thereof
- Loans – \$15.00 per loan

**Billing** -- Charges include postage and handling, and are subject to change. Invoices are issued quarterly by the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161. Phone: (703) 605-6640. Establishing deposit accounts with NTIS is encouraged. Annual billing is available on request by contacting NAL at the address below. **DO NOT SEND PREPAYMENT.** You will be invoiced.

**For postal service delivery send requests to:** USDA National Agricultural Library  
PhotoLab  
Document Delivery Services Branch  
10301 Baltimore Ave., NAL Bldg.  
Beltsville, Maryland 20705-2351

### For electronic access and delivery :

The Document Delivery Services Branch accepts ILL requests from libraries via several electronic methods. All requests must comply with established routing and referral policies and procedures. A sample format for ILL requests follows.

**INTERNET.....lending@nal.usda.gov**

Start the subject line with one word format:

3 letter month abbreviation + day + NAL + # of request placed that day,  
*For Example:* jul25NAL4 (if this is the fourth request on July 25).  
*For Example:* jul 25NAL1-4 (if this is four requests submitted at one time)  
(over)

**OCLC.....AGL**

# National Agricultural Library Document Delivery Services Branch

Print Materials



Electronic

Files



Articles

Putting  
Information  
in Your  
Hands



## TELEFACSIMILE.....301-504-5675

Requests can be created on standard ILL forms and then faxed. NAL will fill via FAX at no additional cost if FAX number is included on request. NAL will send up to 30 pages per article. If request exceeds 30 pages, NAL will ship via postal service. There is no RUSH service.

## ARIEL™ .....ariel.nal.usda.gov

NAL will fill the request via ARIEL™ if the ARIEL™ address is included in the request. NAL treats ARIEL™ at an alternative delivery mechanism--not an expedited service. NAL will send up to 30 pages per article via ARIEL™. If request exceeds 30 pages, NAL will ship via postal service.

### Required data elements for all requests:

- Complete mailing information for all requests regardless of method of delivery. (Borrower's Fax number or ARIEL™ IP address if delivery by either of these methods is desired.)
- Complete citation including verification (source of citation) and NAL call number if available.
- Date after which item is no longer needed.
- Copyright Compliance -- Pre-printed forms must contain your signature to indicate copyright compliance. On e-mail requests include the complete Statement of Copyright Compliance. Libraries may indicate compliance by including the initials of one statement, either "CCL" for compliance with the copyright law or "CCG" for compliance with Copyright Guidelines or a statement that the request complies with U.S. Copyright Law or other acceptable copyright laws (i.e. IFLA, CLA, etc.). Libraries must also provide authorizing official's name. Requests will be rejected if this information is not included.
- Maximum cost you are willing to pay for billing purposes.

### Sample Electronic Mail Request

(Your Institutions Name)/NAL JUL25NAL1 Date Not Needed After:  
9/25/00

(Your Department or Office  
Your University Library or Institution  
City, State or Province, Country, Mail Code)

Dr. Smith (patron name) Biology Dept. (patron office)  
Canadian Journal of Soil Science 1988 v 68(1): 17-27 (complete citation)  
De Jong, R. Comparison of two soil-water models under semi-arid growing  
conditions

**NAL Call Number:** 56.8 C162 **Ver:** AGRICOLA

**Remarks:** Not available at university or in region

**Authorized by:** Charles Johnson

**CCL Maxcost:** \$15.00

Contact the Access Services Librarian, Document Delivery Services Branch at (301) 504-6503 or via Internet at [access@nal.usda.gov](mailto:access@nal.usda.gov) with questions or comments about this policy.

## Services Available to USDA Employees

Copies or loans of NAL materials are provided free-of-charge in response to job-related requests. Requests for materials may be submitted onsite in person, electronically (via ARIEL™, email or facsimile) or by U.S. Postal Service. Employees eligible for service from a local library such as ARS field libraries or Forest Service libraries should make use of these resources before contacting the National Agricultural Library (NAL).

### Copy Service

A single copy may be provided, in lieu of loan, from materials in the NAL collection. All requests must indicate compliance with copyright restrictions. Providing complete, accurate citations and the NAL call number for a document (if available) will speed the processing of requests.

### Loan Service

The loan period for NAL materials is one month. Loans may be renewed for an additional month if no one else is waiting to use the material. Make renewal requests in writing or by calling (301) 504-5755 prior to the due date.

### Booking Audiovisuals

Submit request at least 3-4 weeks before the intended show date when requesting specific audiovisual titles. Specify the particular format preferred if more than one format is given in the citation. To renew audiovisuals or inquire about booking audiovisual materials call (301) 504-5994.

### Copies from Non-Circulating Materials

The following materials are non-circulating: Serials (except for USDA serials); rare, reference, and reserve books; microforms; and proceedings of conferences or symposia. Although these materials may not be borrowed if NAL only owns one copy, requests may be filled in the form of a microform or paper copy if your request indicates copyright compliance. Please indicate on your original request form if a copy of the material is acceptable in place of a loan.

### Delivery Options

Electronic delivery is the preferred method of document delivery at NAL. Copies of journal articles and duplicated microform materials are delivered by facsimile, ARIEL™, or U.S. Postal Service. Copies of material will be delivered electronically whenever a fax number or ARIEL™ IP address appears on the request. Books borrowed from other sources will be delivered by FedEx to ensure their safety and receipt.

### Interlibrary Borrowing or Purchase

If materials are not available at the NAL, we will try to obtain from another source. Turnaround time on interlibrary loans varies depending on location and availability of materials. If an item cannot be obtained through borrowing, NAL will attempt to purchase it, which also adds to the turnaround time.

154

### How to Format Requests

All requests, regardless of format, **must** include the data elements listed below. A separate request form must be submitted for each document. When requesting via e-mail, however, more than one request form may be included in the same e-mail message.



## Required Data Elements

- Borrower's name, full mailing address, and USDA or other eligible agency name. On e-mail requests this information must be in block format with at least two blank lines above and below so form may be used in a window envelope.
- Complete citation including verification (source of citation) and NAL call number if available.
- Date after which item is no longer needed.
- Copyright Compliance  
Pre-printed forms must contain your signature to indicate copyright compliance. On e-mail requests include the complete Statement of Copyright Compliance ("I have read the warning on copyright restrictions and accept full responsibility for compliance"), **your full name, date, and telephone number in each request**. Libraries may indicate compliance by including the initials of one statement, either "CCL" for compliance with the copyright law or "CCG" for compliance with Copyright Guidelines. Requests will be rejected if this information is not included.
- Fax number or ARIEL™ IP address (if delivery by either of these methods is desired).

## E-Mail Request Procedures

E-mail: [lending@nal.usda.gov](mailto:lending@nal.usda.gov)

Electronic mail requests may be sent via the Internet to the address above. Multiple requests may be included in a single message if they are complete unto themselves, contain all of the required data elements and closely resemble the samples below. Each request within a message must be formatted as an individual request complete with name, address, copyright compliance, and request ID number. Use the following standardized number format to identify the requests included in the e-mail message:

- 1st request sent to NAL on July 25 will be jul25NAL1
- 2nd request sent to NAL on July 25 will be jul25NAL2

Each request should cite this identification number on the request form. The number or range of numbers if more than one request is included in the same e-mail message (ex: jul25NAL1-4) should also appear in the subject line of the e-mail message.

## ARIEL™ Request Procedures

NAL IP Address: [ariel.nal.usda.gov](http://ariel.nal.usda.gov)

ARIEL™ is a document delivery software package (available from Research Libraries Group) which allows documents to be scanned and sent over the Internet. Requests can be submitted via email, mail, etc., or created on one of the standard forms listed under "Mail" below, scanned and sent to NAL's IP address. If an ARIEL™ 'receive only' package is loaded on to your computer you can receive and print articles at your desktop. If an ARIEL™ address is included in a request, NAL will deliver up to 30 pages per article via ARIEL™. If the article length exceeds 30 pages or cannot be scanned reliably, NAL will deliver the material via Postal Service. For more information about this software (including equipment requirements) visit RLG's ARIEL™ WWW site ([http://www.rlg.org/cgi-bin/print\\_hit\\_bold.pl/ariel.html](http://www.rlg.org/cgi-bin/print_hit_bold.pl/ariel.html)).



## Mail & Fax Requests

Requests may be sent to NAL via the U.S. Postal Service or facsimile. Requests should be submitted using one of the standard forms listed below.

- AD-245 (available from USDA procurement)
- CALS Printout - copy & complete the address & copyright information from the AD245 on to the back of the CALS printout.
- Individual Request Form (IRF)
- ALA or FILLS Interlibrary Loan Form

**Mailing Address:**

**Fax Number:** (301) 504-5675

National Agricultural Library  
Document Delivery Services Branch, 6th Floor  
10301 Baltimore Avenue  
Beltsville, MD 20705-2351

## Sample Electronic Mail Request

JUL25NAL1

Date Not Needed After: 8/25/2000

Richard Smith  
ARS, USDA  
Research Station  
Heartland, IA 56789

Canadian Journal of Soil Science 1988 v 68(1): 17-27  
De Jong, R. Comparison of two soil-water models under semi-arid growing conditions.

**NAL Call Number:** 56.8 C162

**Ver:** AGRICOLA

I have read the warning on copyright restrictions and accept full responsibility for compliance

Richard Smith                      7/25/00                      Phone# (301)555-1234  
(your) Fax#: (301)555-5678                      (your) ARIEL IP Address: 111.222.333.444.555





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